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Educational News and Editorial Comment

THE BUREAU OF EDUCATION

The limitations of the federal Bureau of Education are becoming more evident with the increasing demands for larger service from such an agency. The pressing nature of the problem is well expressed in the following quotation from an editorial appearing in the February number of the *Journal of the National Education Association:*

The Constitution of the United States commits the control of education to the respective states. The National Education Association believes that the control of education should remain in the states and that the federal government should discharge its educational responsibilities by conducting researches in the various fields of education and by financial co-operation with the states in certain fundamentals which are essential to good citizenship in both state and nation.

The scant support which the Bureau of Education has received at the hands of the federal government is a disgrace to the nation. Men and women of proved educational ability have been paid salaries that would be too low even for mere clerks. In many cases the government has been unable to obtain the services of recognized experts for the salaries provided. Important investigations have been left unmade or have been taken up by agencies less well fitted than the government to make them. Whole departments of educational activity have lacked that stimulus which would come from a careful study of

the facts. The gravity of the situation is well set forth in the report of the Commissioner of Education, Honorable John J. Tigert, for the year ending June 30, 1921, in which he says:

"I am of the opinion that the department should seriously consider the question as to the advisability of continuing the Bureau of Education on the present basis of wholly inadequate support. The need of a national governmental agency to perform the functions expected of this bureau is imperative and unquestioned. The efforts to meet the need, however, are largely nullified by the legislative restrictions and financial limitations by which the Bureau is at present handicapped. In my judgment, it would be better for the federal government to withdraw from this field of activity entirely unless provision is to be made for it on a more liberal basis, and the policy definitely adopted of attempting to render in an effective and authoritative way the kinds of constructive service which the people and the educators themselves demand. It is futile to continue this organization on the present penurious basis and to expect returns that justify the outlay."

TEACHING THE A-B-C'S

The *Detroit Educational Bulletin* contains the following:

The ups and downs of educational method afford an interesting study. For instance, when our fathers went to school, no one would ever have deemed it necessary to emphasize the teaching of A-B-C's. From time immemorial, the very first step in a child's education was to learn the letters of the alphabet in order. Every child who had been to school at all, at least knew his alphabet. Mastery of the alphabet was taken for granted in all subsequent educational work.

But times have changed since the days of our fathers. The scientific study of the way children learn proved conclusively that the best first point of attack in the reading problem is the meaning of whole sentences, not letters, that the breaking up of sentences into words comes next, and that the analysis of words into letters is the very last step of all. Under the best modern methods, the little beginner learns to read as well in eight or nine weeks as our fathers and mothers did in several years.

The inevitable consequences have followed. The direct teaching of the alphabet has tended to disappear from school work. However, incidental learning is never thorough learning. For mastery there must be systematic drill, organized effort. Very curiously also with the decline of the emphasis on the teaching of the letters, there has come a greater social need for a thorough mastery of the alphabet. A man today makes use of the telephone directory, the dictionary, and similar books of reference much more frequently than the man of two generations ago. Alphabetical filing is much more common than formerly. Use of indexes and similar alphabetical arrangements is on the increase. In these days, a thorough knowledge of the alphabet and the ability

to tell instantly and automatically whether "L" comes after or before "M" have ever a greater and greater social value.

In Detroit, direct provision is made for the teaching of the alphabet both incidentally and directly. In the second and third grades, the activities connected with reading extend the child's analysis to letters, and the wise teacher takes advantage of the opportuinty to fix the alphabetical order through games and drill. From the fourth grade on, alphabetical listing of words, the taking of filing tests, and many similar activities are provided for directly in the courses of study in English and spelling. Occasionally a teacher or a principal does not recognize the importance of this type of work, but in general there is no excuse for any child's leaving school at the end of the compulsory period without a thorough knowledge of the alphabet and the ability to use that knowledge as a reference or filing tool.

REWARDS FOR SUMMER-SCHOOL WORK

The Grade Teachers' Association of Minneapolis has published a pamphlet written by Miss Clara Langvick and entitled "The Growth of Teachers in Service." This pamphlet publishes the results of an inquiry addressed to the State Department of Education and to three hundred city-school systems. The questions asked are as follows:

Does your city pay expenses of teachers while attending summer school?
What amount is allowed each?
Is it given as a bonus? As a raise in salary?
How much do you allow for travel?
How many teachers attended school during the summer of 1918? 1919? 1920?
How many teachers do you employ?
Do you provide a sabbatical vacation for your teachers on full pay? Half? Part?

There were eight states which made an affirmative report. The details of their statements are as follows:

Delaware—$100 is granted as a bonus.
Maryland—$25 is granted as a bonus.
New Mexico—Cost of transportation to the school and return is paid.
Connecticut—Books, supplies, and instruction are provided free of cost.
Rhode Island—The state conducts a summer school and offers free tuition. Mileage is paid for normal-school students in regular courses.
Maine—Expenses are paid in the case of one group for special teacher-training work.
North Carolina—If credits are earned, the teachers receive a raise in salary.

Montana—Each county pays the tuition. State refunds to the county all above $50 per teacher.

In Colorado, Baca County pays its teachers a bonus of $10 for attendance at the normal institute.

In many cases the state superintendent wrote that it was common practice in many districts for the local board of education to reward attendance at summer school.

Of the 300 school systems addressed, 203 replied. In 131 no rewards are offered to teachers. From 72 an affirmative reply was received. A full statement of the practices of 22 selected cities is given in the table on page 485.

The author makes a comparison between the fourteen cities here reporting the full facts and forty-six cities which were included in the inquiry and reported that they gave teachers no rewards. The median percentage in the cities giving no reward was 13.7, as compared with 16.5 shown in the table for fourteen cities giving rewards.

Other tables are presented showing types of rewards different from those given in the table quoted. The author's general conclusion is as follows:

From the above facts it is reasonably fair to assume that approximately one-third of the cities in the United States offer some reward to teachers who are willing to make a real effort to enlarge their professional equipment by study or travel or the equivalent of these. The cities that are doing something in this line belong to no particular population group and to no one part of the country, all parts of the country and cities of all sizes being represented.

The most common basis for reward is study at summer school, though extension work is mentioned. Travel, home study, and attendance at professional meetings are not infrequently made the basis.

In most cases the reward is in addition to all other remuneration, though in some cases it is only the normal salary increase and refused to all who do not meet certain conditions. In other words, the plan seems to be to penalize those who do not show progress rather than to reward those who do show progress.

KINDERGARTEN-PRIMARY

The public-school system of Highland Park, Michigan, has taken a new step in the direction of a closer amalgamation of the kindergarten and first grade. Two large neighboring rooms in the Willard School, which were formerly used for the kindergarten and first

grade, have been reconstructed so as to furnish two small classrooms at each end of a large central room known as the "problem or work room."

City and Condition under Which the Reward Is Granted	Number of Teachers Employed	Number Attending Summer School	Percentage Attending Summer School
1. San Diego, California: When teachers present a year's credit they are advanced a year in salary schedule	.....	.....	.....
2. Parkersburg, West Virginia: One-half of expenses—limited to $100	.....	.....	.....
3. Scranton, Pennsylvania: $100 for 16 credits, $200 for 32 credits	.....	.....	.....
4. South Bend, Indiana: $25 for each 5 semester hours of work	.....	.....	.....
5. Terre Haute, Indiana: $50 for 3 credits	.....	.....	.....
6. Bismarck, North Dakota: $76	.....	.....	.....
7. Worcester, Massachusetts: 10% of annual salary. The amount must not exceed $200	.....	.....	.....
8. Rochester, New York: $50 for work done at summer school	.....	.....	.....
9. Omaha, Nebraska: $100 as a permanent increase in salary to teachers receiving the maximum salary who earn 6 credits. $50 to teachers who have not received the maximum and who earn 5 credits	1,120	230	20.5
10. Davenport, Iowa: $60 for 12 weeks of work. $30 for 6 weeks of work	330	3	.9
11. Racine, Wisconsin: $100 for 60 hours of work	290	60	20.6
12. Superior, Wisconsin: $50	275	34	12.3
13. Rock Island, Illinois: $50	181	18	9.9
14. La Crosse, Wisconsin: $50	160	20	12.5
15. Phoenix, Arizona: $100 to teachers receiving the maximum salary and who earn 6 credits. Three such promotions may be made	160	18	11.2
16. Fargo, North Dakota: $75	155	47	30.3
17. Ann Arbor, Michigan: $100 increase in regular salary for a period of two years. Six credits are required	135	30	22.2
18. Grand Island, Nebraska: $75 for college work toward a degree	103	36	34.9
19. Rutland, Vermont: Tuition and transportation	66	6	9.0
20. Raton, New Mexico: $75	46	4	8.6
21. Jerome, Arizona: $100 and transportation	45	12	26.6
22. Biwabik, Minnesota: $100	41	14	34.1
Total for 14 cities	3,107	532	17.1
Median percentage of 14 cities	.....	.....	16.5

The children of both school divisions meet in the central room during the periods when formerly they were engaged in busy-work. They find in this common central room equipment which makes

it possible for them to engage in construction problems under the guidance of a special teacher.

In the small rooms at the sides are two other teachers carrying on the type of work which may be described as academic. All told, there are eighty pupils under the supervision of these three teachers, twenty in each small room and forty in the large room.

What these children are doing is described as follows by Miss Myrrl Hight:

> All reading, spelling, phonics, penmanship, and number work drills requiring a small group of children are carried on in small rooms, so that the teacher may be free to give as much individual attention as possible to each child. Thus, recognition of individual differences is given so that each child may progress according to his ability. Children are transferred from one group to another within the unit, keeping the child as nearly as possible with his own mental group.
>
> An attempt is made to correlate the reading, spelling, etc., of the small study rooms with the activities of the large work room. For example, the daily newspaper printed in the large work room by the children using the price and sign maker outfits, is sometimes sent into the small rooms to be read by the other group of children, or story books made in the large room as an outgrowth of language, nature study, hygiene, or drawing are sent into the small room to be used as a reader for the day. Sometimes the children are encouraged to give the teacher of the small room sentences for the bulletin board, telling of their latest accomplishment in the large work room, thus furnishing an opportunity for correct language expression, motivated spelling, and reading. Whenever possible, stories are selected for their readers along the line of some handwork, nature or language activity going on at that time in the large room. Thus the work of all three rooms is unified.
>
> The language, history, nature study, hygiene, music, drawing, handwork, physical training, plays and games, etc., where a large group of children can be handled to advantage are carried on in the large work room, as well as much incidental reading, spelling, and number work.
>
> Many of the large group activities are an outgrowth of the natural experiences of the child as brought out through the study of the subjects mentioned above. An opportunity is also given individual children to work out their own projects and plans. The aim of the room is to develop self-expression, to enable the child to realize the possibilities and learn various uses of materials, to gain power over materials and enlarge his experiences.

TEACHING MORALS IN ELEMENTARY SCHOOLS

In Little Rock, Arkansas, a plan has been developed for teaching morals in the grades. A topic to be discussed is selected, and a lesson dealing with this topic is prepared through discussion between

the teacher and members of the class. After the lesson has been worked out, ten members of the class are selected to present it to other grades. A report published in one of the local papers shows how a lesson in honesty and responsibility was carried to other classes by representatives of the grade which originated it.

The door of Room 17 at the Peabody School swung open and twelve boys and girls from the second grade marched to the front of the IV A classroom. Every IV A pupil straightened in his seat and watched attentively while James Counts, the "doctor," stepped to the teacher's desk and reached for a miniature telephone which had been placed there for its part in the playlet, "Keeping a Promise." "Yes, this is Dr. Johnson," said the boy, "Who? At St. Vincent's Infirmary? Yes, I'll come right over."

"How many of you will stay at the office to answer the telephone?" asked the young "doctor" turning to the other eleven members of the party.

"I will," came from all in unison.

With his nurse and office assistant, Mildred Thorpe, accompanying him, "Dr. Johnson" left his office in charge of the other ten members of the party.

"Boys, let's go out and play marbles," suggested Kelly Grey.

"I'm not going," said one.

"Nor I," came from several others.

"But the phone will not ring, and besides we will hear it," Kelly insisted.

"I believe I'll go with him," said Wesley Barrentine, and the first two disloyal ones left the room.

Time hangs heavy when one has nothing to do, and one by one the children left their posts and broke their promise, as the temptation of a movie show, an auto ride, or an ice cream party was offered. Frank James was the only one who stood firm.

Then the phone rang. It was a call for the doctor to attend a broken arm.

"He's at the hospital," said Frank.

In each of the twenty-one rooms at the Peabody School these playlets are presented daily. Every student takes a part in the play or in a discussion of the points which the play is intended to convey to pupils.

Twenty-one subjects have been listed for the twenty-one rooms. The subjects include courtesy, self-reliance, honesty, and kindness, and other principles heretofore taught the pupils by lecturing and speeches.

The work, which is being carried out in all the schools under different schedules and plans, is the suggestion of the committee on training in morals and manners. Pupils taking part in the discussion of these subjects, following the presentation of the play, are able to grasp their meaning and value much more quickly than from a lecture given by a teacher or an older person. The system has been of untold value at the Peabody School, the principal said. All of the 950 students there will have taken part in some of the twenty-one playlets on these subjects by the close of the term.

The exercises for the year have been organized into a systematic course, the subjects for which were selected by the teachers after careful consideration and correspondence with other school systems interested in arranging lessons in morals and manners. The list of topics thus selected may be of interest to others working in this field and is reported by Principal Means of the Peabody School as follows:

Rooms	Subjects
A	Cleanliness
B	Self-reliance
C	Loyalty to country
D	Courtesy
E	Food, sleep, exercise
F	Kindness
G	Kindness—different development
H	Orderliness
I	Cleanliness in clothes, body, and mind
J	Loyalty to home
K	Politeness
L	Whose big brother or sister are you?
M	Incomplete job
N	Work hard; play hard
O	Honesty. Keeping your promise
P	Entering and leaving building
Q	Bullying
R	Honesty in word and action
S	Health
T	Care of birds
U	Waste not; want not

A NUTRITION EXPERIMENT

In Meriden, Connecticut, all of the children in the elementary schools were weighed and measured in March, 1921; tags were given out showing whether the children were underweight or overweight and how much; and circulars of instructions as to the use of milk as a food and the importance of normal growth and development were sent to the parents. Beginning in April milk was served daily in the schools to all children desiring it. Approximately 80 per cent of those enrolled drank milk regularly. The cost was twenty cents a week per child. It was provided free for those unable to pay. It was delivered in cases of half-pint bottles and

served at the morning recess. A straw was given with each bottle. In some schools the larger boys carried the cases directly to the classrooms where the milk was served and the bottles returned to the cases. In other schools all milk was served from a central place. In March the percentage of malnutrition was 25.1. In June it had been reduced 7 per cent, which meant that approximately 333 children had reached normal weight. For the 3,920 children taking milk daily, there was an average gain in weight of approximately five pounds. In June they were daily consuming in school 410 quarts more than in April; a large number of children who had previously not habitually had milk at home began drinking it. Parents became more interested in milk as a general food, especially for older children. A very important gain was in the substitution of milk for tea and coffee at home. In April 2,284 children reported that they drank tea and coffee regularly at home. In June this number had been reduced 50 per cent. Teachers, parents, and the public generally favored the plan and reported noticeable improvements in the children.

The significant relation of malnutrition to mental vigor and success in school work was indicated in a number of ways. In open-air classes, 59.5 per cent of the children were seriously underweight, but about 80 per cent recovered normal weight and health and returned to the regular classes after six months to two years of rest and feeding in which milk had an important place. Classes of mentally deficient children showed an average of 51.8 per cent malnutrition, indicating that they should have the same treatment as those in the open-air classes.

In two country schools, in which most of the children are from farms, the percentage underweight was 35.7, far higher than most classes in the city. A school with children mainly of Italian parentage showed the highest percentage of normal weight, while many children from well-to-do American homes showed a high percentage of malnutrition. Explanation for the failure of some children of high mental ability to complete the work of their classes was found by reference to their health and nutrition records.

In this brief period of experiment it was demonstrated that this nutrition work is of great value for better health and physical development and general school progress, building up in the lives

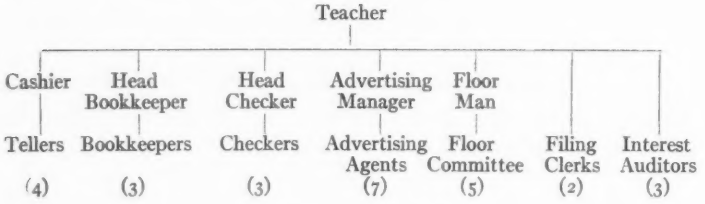
of many pupils the foundation of vigorous health essential for normal future growth and resistance of infection. It becomes, therefore, an important means for the betterment of the community and of the state.

DAVID GIBBS

THE BLEWETT THRIFT BANK

A well-conducted school savings bank may be made to serve a variety of functions. As organized in the Blewett Junior High School of St. Louis, the project not only gives direct education and practice in thrift, but also furnishes opportunities for instruction in office practice, bookkeeping, arithmetic, filing, advertising, and English. The following extract, quoted from a statement by Principal H. H. Ryan, describes the plan in operation.

Following is a graphic outline of the organization, as set up by Miss Elizabeth Rice, the instructor in charge:



One of the eighth-grade elective commercial classes was given the management of the bank as its work for one semester. Its daily commercial period was set at the noon hour, so that in the working out of the intricacies of the program each pupil of the school would find the bank open at his lunch hour on at least two days of the week. In addition, the class volunteered to keep the bank open for a few minutes before and after school each day.

The institution is a savings bank, its procedure being copied from that of the conventional savings bank. Interest is paid at six-month intervals at the rate of 3 per cent.

The new depositor is received by a member of the floor committee, who helps him make out his identification card, gives him a bank book which is marked with his name and serial number, and helps him make out a deposit slip for the initial amount. He then introduces the new customer to the appropriate teller. Each teller handles all those depositors the initial letters of whose names fall within a given section of the alphabet. The teller takes the deposit slip, countersigns it, enters the deposit in the passbook, and returns

the passbook to the depositor. Later deposits are handled in the same way, with, of course, less attention from the floor committee.

To withdraw, the depositor makes out a withdrawal slip and presents it to the teller, together with his passbook. The teller debits the amount in the passbook, stamps the withdrawal slip, and pays out the money. In the case of either deposit or withdrawal, the teller checks the amount with especial care; and in either case the depositor indicates on the slip the amount of his balance. This serves as a check on the ledger.

Withdrawal slips, after passing the teller, go directly to the bookkeepers; deposit slips go first to the checkers and then to the bookkeepers. Individual ledger cards are used, divided among the four bookkeepers according to the depositors' serial numbers. The head bookkeeper makes the distribution. The filing clerks take the withdrawal slips from the bookkeepers and file them by dates.

When the depositor's balance reaches five dollars, he is urged to open a savings account in the First National Bank of St. Louis. He may go personally to the bank, or the teacher may act as the agent of the bank and enrol him as one of its depositors. In the latter case she fills out the necessary forms, takes these to the bank, and deposits for him the total of his Blewett Bank balance, including accrued interest. There is cash available for this transaction from the day's receipts of the Blewett Bank.

The daily receipts of the Blewett Bank, in so far as they are not needed for such transactions as the foregoing, are deposited in the First National Bank in a savings account known as the Blewett Thrift Fund. This fund draws interest on the basis of its daily balances; by special arrangement withdrawals may be made from this fund at any time without loss of interest already earned. The pupil's deposits draw interest first from the Blewett Bank and then from the First National Bank. What he gets in that way from the Blewett Bank is his share of the interest on the Blewett Thrift Fund.

The principle of rotation in office is followed, so that each pupil gets practice in every type of work required to run the bank. Each semester a new class takes charge of the institution. The teacher performs the varied duties of manager, inspector, and auditor.

During the twelve weeks that the bank has been in operation this year there have been 549 depositors; the deposits have totaled $1,541.23; the withdrawals (Christmas?), $643.21.

News Items from the School of Education of the University of Chicago

INSTRUCTORS AND COURSES FOR THE SUMMER QUARTER

Frequent inquiries are being received concerning instructors who will be in residence during the Summer Quarter and the courses which will be given. Opportunity is taken at this time to supply the readers of the *Elementary School Journal* with information on these points. The following list of instructors and courses is limited wholly to visiting instructors in the Department of Education and does not include instructors or courses in special-methods departments. A bulletin of all courses will be sent on request.

Dr. Carter Alexander, assistant in the Educational Finance Inquiry, New York City, will give, during the First Term, a survey course on Financial Organization and Administration and an advanced research course on School Costs.

A. S. Barr, assistant director of instruction, Detroit, Michigan, will give, during the Second Term, a course on the Use of Tests in Improving Instruction in Elementary Schools and a course on High-School Methods.

President J. C. Brown, State Normal School, St. Cloud, Minnesota, will give, during the Second Term, a course on the Organization and Administration of Teacher-training Institutions and a course on the Criticism and Supervision of Elementary-School Instruction.

James W. Clarson, professor of education, University of Arizona, will give courses on Rural Education and the Psychology of High-School Subjects.

Dr. George S. Counts, professor of education, Yale University, will give a course on High-School Administration and a research course on High-School Problems.

James B. Edmonson, professor of education and inspector of high schools, University of Michigan, will give a course entitled Introduction to Public-School Administration.

W. S. Guiler, professor of education, Miami University, will give courses entitled, Introduction to the Scientific Study of Education and Introduction to the Psychology of Elementary-School Subjects.

J. M. Gwinn, superintendent of schools, New Orleans, Louisiana, will give, during the First Term, courses on the School Population and the Administration and Supervision of Elementary Schools.

Dr. E. E. Lewis, superintendent of schools, Rockford, Illinois, will give two courses on the Teaching Staff and a course on Junior High Schools.

Dr. T. A. Lewis, professor of education, Denison University, will give courses on High-School Methods and the History of Elementary and Secondary Education.

President E. George Payne, Harris Teachers College, St. Louis, Missouri, will give, during the First Term, courses on Physical Education, Medical Inspection, and School Nursing, and the Use of Tests in Improving Instruction in Elementary Schools.

Miss Elsie M. Smithies, dean of girls in the University High School, will give, during the First Term, a course entitled, The Study and Supervision of the High-School Girl.

Dr. William B. Sharp, professor of preventive medicine, University of Texas, will give, during the First Term, a course on School Hygiene.

James H. Van Sickle, superintendent of schools, Springfield, Massachusetts, will give, during the Second Term, courses on the School Population and the Administration and Supervision of Elementary Schools.

Paul V. West, professor of education, University of Wisconsin, will give courses in Statistical Methods and Experimental Methods.

FEDERAL PARTICIPATION IN EDUCATION

CHARLES H. JUDD
University of Chicago

In an article published in the February issue of the *Elementary School Journal* a symposium was presented of the views of a number of leading educators with regard to the general matter of federal participation in the control of education. The article may be fairly summarized in the statement that there is general agreement that measures of nation-wide scope must be adopted to cure defects which now exist in the educational systems of this country. There is, on the other hand, great reluctance on the part of many to agree to any legislation which will give federal control over educational administration.

We turn from the discussion of general principles to a review of some of the details of definition of the proposed department which appear in letters other than those quoted in the earlier article. It is evident that when Congress acts on the proposal to create a federal educational agency there will have to be agreement on some details as well as on the general principles.

First, evidences are not lacking that the suggestion of a commission, rather than a department, is still accepted by a number of educational people as the best solution of the problem. C. R. Mann, chairman of the Advisory Board of the Division of Operations and Training of the War Department, working in collaboration with others, has drafted a proposal for a commission which is prefaced by the following statement:

> The establishment of a United States education commission as herein proposed solves the problem of the federal organization of an education office better than other proposals that have been made for the following reasons:
>
> 1. It recognizes that education is not an executive function of the federal government. There is no justification, either explicit in the Constitution or implicit in the needs of our form of government, for the federal government to administer and maintain schools or pay the running expenses of schools except as required for the training of men for national defense.

2. It gives education a proper dignity in the federal government by recognizing it as a profession like law and organizing it more along the lines of the Supreme Court than as an executive department with a secretary in the president's cabinet.

3. It tends to remove federal activities in education from politics, in that there is no change of office because of change of political administration. The president will appoint one member of the commission each year, but the tenure of office for each member is five years so that there will be no abrupt changes. Since each member is eligible only once to re-appointment, the maximum tenure of office of any one member is ten years. Therefore, the commission will not tend to get into a rut or become fossilized.

4. It removes the danger of demands for large appropriations, because it defines the federal functions of education and limits the activities of the commission to those functions which do not include administration and financial support of civilian schools. Under the department organization there would be constant pressure for increased expansion and for the subsidizing of education by the federal government. If the members of the commission are chosen with the same care as are cabinet members—men of broad outlook as well as comprehension of the educational needs of the country—they will soon demonstrate that this organization meets the needs of the situation without subsidies, and the campaign for subsidies will quickly subside.

5. It establishes sound democratic relations between the federal government and the states. It encourages the states to look to the federal government for opportunities to serve rather than to look upon the federal government as a source of easy money. It encourages the people to consider what they can give rather than what they can get.

Professor Inglis, of Harvard University, takes briefly the same general position, as follows:

I have never been in favor of the proposed department of education, much preferring a commission form of organization, largely for the purpose of avoiding the political difficulties which have not been without recognition in the past.

The answer of Professor Bagley, of Teachers College, to this proposal is contained in the following paragraph:

I have every respect for those members of our group who sincerely believe that the nation's interest in education would be best subserved by a federal commission independent of all departments. I do not agree with them, but this is immaterial. It is not immaterial that Congress and the people generally are opposed to independent commissions. There is but one pair of alternatives: Either education must be recognized as a major concern of the nation through the erection of a federal department of education, or it must remain as a very minor concern, an inconspicuous and impotent bureau or division, tucked away in the corner of any major department that has room for it.

It is not because we as individuals are engaged in educational work that we object to the latter alternative. It is rather because the obligation rests upon us as upon no other group to protect and promote an interest that is universally conceded to be major and not minor.

Another suggestion, which is made several times in the letters on which this article is based, is pointedly made by President McVey, of the University of Kentucky, as follows:

I am of the opinion that more progress could be made by enlarging the present Bureau of Education and securing more funds for it. When this is done, the Bureau will grow naturally into a departmental organization. It will have the advantage of showing Congress the necessity of such an organization.

Such a proposal, as well as the proposal to include education in a composite department of welfare, is repudiated by a number of correspondents. An extract from a statement by Superintendent Bliss, of Montclair, New Jersey, will show the general attitude of such writers.

The proposed alternative, that of organizing the work of the educational department as a subhead under a department of welfare, is depressing in its inadequacy. Much of the value of the new department would lie, in the opinion of most educators, in the national recognition afforded to the importance of education, and in the support and counsel of an organization of sufficient strength and dignity to command a personnel of the highest type, able to speak with authority.

Various correspondents enumerate at length the series of functions which they think it will be the duty of the department to fulfil. Superintendent Stebbins, of Grand Forks, North Dakota, is the author of the following:

I believe that the administration and Congress are wrong in their attitude toward education and a department of education.

While I believe that the appropriation proposed by the Towner-Sterling Bill is advisable, I should prefer the department of education without an appropriation rather than not to have either. Appropriations will come if the department can justify its existence. What such a department can accomplish will depend upon the financial support that it receives. When we consider national welfare, it would seem that education is fully as important as commerce and labor, agriculture, and the postal system, or even war and navy. The department of education should co-ordinate with the other departments equal to them in power and dignity.

All educational activities of the general government should be centered in this department. (This includes a multitude of things now done by other departments.) The department should emphasize the preparation of teachers. It should subsidize normal schools under proper restrictions. In some substantial way it should encourage states to provide for the training of teachers. The department should be a clearing-house for real information concerning the educational activities of the world. Some phases of educational work, school administration, financing, and accounting might well be standardized. This should be part of the work of the department. The department should endeavor to equalize educational opportunity. The department could best aid schools in general by the creation of a fund to be loaned to school districts for the purpose of providing buildings and equipment. The loans should be based on some percentage of the assessed valuation and should be secured by serial bonds.

The department should not dictate, but should lead, educational policy. States and localities must have a large measure of freedom in educational policy.

The department should carry on educational investigations and experiments. We hear constantly of the importance of education to the nation. Men outside of the teaching profession who are prominent in the affairs of city, state, and nation are constantly complaining of the character and quality of the work done by the schools because the schools do not train effectively for useful and intelligent citizenship. There is probably more or less reason for these criticisms. The kind of schooling that these people suggest, however, whenever they do suggest anything, is an expensive schooling, costing from two to four times as much per capita as the subjects which would be displaced. When schools attempt to get new equipment for new courses, new buildings for increased enrollment, or better pay for better teachers, they meet limitations in the amount of money that may be raised by taxation. There is a constant pressure upon the legislative bodies of cities and states for the purpose of limiting tax levies. We are told that the limit has been reached, which appears to be the case; many states and cities have been compelled to cut their educational programs. If it is true that the schools are not doing what they should; if it is true that this is due, even in part, to lack of funds; if it is true that the limit of taxation has been reached, then new sources of school revenue must be found. The most logical source of these funds is the state and national governments, which can raise indirectly the funds which cannot be raised directly.

Principal John A. H. Keith, of the State Normal School at Indiana, Pennsylvania, contributes the following:

The following arguments in favor of a department of education in the federal government are clear.

1. Existing federal legislation relating to education has been enacted without reference to any definite plan. It is now time to give increased effectiveness to all federal educational activities by uniting them under one executive head. These activities are important enough nationally to bestow cabinet rank on the person who administers them.

2. Organizing the present educational activities of the federal government into a department will be a proper, though tardy, recognition of the national importance of education. The exercise of every sovereign function of the United States is determined by the education of its citizens. The creation of a department of education would tend to create in all men a clearer understanding of the primary importance of education and a sense of what public education ought to become. In other words, a new sanction in education would be created by the creation of a department of education.

3. Educational problems are no longer local problems or even state problems. They are national problems. We are in need of a leadership that will enable us all to see educational problems and procedures in national as well as state and local terms and outcomes.

4. Studies and investigations in the field of education, on a scale and with a reference to the needs of public education hitherto unknown, could be carried to fruition by a department of education to the benefit of every aspect of public education in every part of our country. Without a department of education such studies will not be made.

The department of education, then, should be so constructed that it may give unity to present educational activities of the federal government, create a new sanction in education, exercise leadership, and make this leadership effective by "making the best contagious" through its studies and investigations. All of these results can be secured without touching even the "hem of the garment" of state control of public education and to the very great advantage of the nation, the states, and the communities.

State Superintendent Johnson, of Michigan, writes:

The biggest problem facing educators today is probably that of securing recognition for education as being of paramount importance. It is not so conceded at the present time by the average politician. Labor, agriculture, commerce, or any other organized activity is deemed to be of greater importance than education. For this reason it is essential that a department of education be created. This department should by all means be more than a paper department. By means of moneys in its hands for distribution, it should be able to secure uniform accounting, uniform reporting, a minimum school year of nine months, at least two years of professional training above a a four-year high school for every teacher, and some high-school facilities for every child.

State Superintendent Swearingen, of South Carolina, makes the following elaborate statement:

1. The federal government is already working to a considerable extent in the field of education. The land-grant colleges alone established this contention. There are also various lines of work through the Department of Agriculture, through the Department of Labor, through the Federal Board for Vocational Education, through the several bureaus of health, and perhaps otherwise. The overlapping among these various activities should be corrected. The work of these various agencies should be co-ordinated so as to prove more effective and more economical. Any attempt to continue these activities without the money provided for them would prove futile.

2. A federal department of education with a cabinet head and adequate staff ought to set up standards by which educational institutions and educational activities can be fairly and impartially measured. This department ought to supervise and inspect all so-called philanthropies, boards, private agencies, and so forth, which now busy themselves with the guardianship of public education in all its forms. In the absence of public agencies, these private foundations have done a necessary and valuable work. At the same time, this service could and should have been much better performed by investigators accountable to public opinion. To attempt this co-ordination or this service without funds would be to fail in advance.

3. A federal department of education is needed to initiate and conduct studies and investigations, both at home and abroad. Whenever such investigations are undertaken in any locality, any county, or any state, the full approval of educational authorities of the commonwealth should be prerequisite to the work. Bureaucrats from a distance are hardly less objectionable than irresponsible private agencies.

4. The federal department of education should be available for any service that might be called for by local or state educators in any commonwealth. Surveys, when welcomed by the taxpayers, usually prove helpful to the schools, but surveys instituted and conducted merely to keep some busybody engaged always do more harm than good.

5. Propaganda is not a legitimate function of any governmental department. Facts when properly presented are a sufficient appeal to public opinion. Any attempt to use propaganda of any kind through the schools or through the department of education should be strictly prohibited.

6. Institutions of all types and grades, from the kindergarten through the university, should be clearly and plainly rated by some competent and central authority. The department of education should have ways and means for performing this task thoroughly for all schools, public, private, and parochial, of whatsoever grade. The interchange of teachers, students, and pupils among the institutions and schools of the forty-eight states is sufficient basis for this demand.

7. There should be some sort of equalization of educational opportunity among the forty-eight states as well as among the schools within each of these forty-eight states. The federal government enumerates the people in its

census. The federal government likewise estimates the wealth and taxpaying power of each locality. There is an inescapable relation between population, wealth, and schools. The government ought to maintain some sort of minimum per capita outlay for each child of school age. This, again, cannot be done without money.

8. In all its activities of whatsoever nature the federal department of education should be purely a co-operative agency to be used at the request of local and state officers wherever funds are given through the department. Their distribution should be merely a clerical matter, in no sense discretionary. The basis of such distribution should be clearly indicated in the law so as to admit of not even the shadow of doubt.

One cannot read the foregoing statements without arriving at a vivid realization of the difficulty that confronts Congress in setting up the new federal agency for the promotion of education. Some of the functions advocated are purely advisory; some are so full of authority that they could be sanctioned only after a frank acceptance of the principle of federal control.

For example, Superintendent Swearingen's sixth sweeping proposal recalls the historical fact that the Bureau of Education, not many years ago, attempted to classify the colleges of the country. The classified list got as far as proof sheets and was at this stage a subject of such bitter opposition that it was suppressed by President Taft. The Bureau started the work once more under the succeeding administration, and the list was again suppressed, this time by a president with a great deal of personal experience in classifying colleges. In the light of such history is it probable that Congress will set up a classifying agency?

The purpose of the last paragraph is not at all to oppose the creation of an agency for classifying colleges. The writer is attempting to act for the time being as a reporter. He may be justified in turning aside far enough to say that he is personally very much of the mind that there ought to be a federal report which will make perfectly clear the standing of every educational institution, public and private.

Personal opinion aside, however, the evidence makes it clear that there will have to be some careful, analytical thinking done before a department of education is launched. Are educational people going to leave this careful thinking to the members of Con-

gress? Are the proposals of educators to be vague and general or are we to have a full and frank discussion, and an ultimate understanding, if not agreement, on some of the knotty problems?

Perhaps the hardest problem to solve is that of financial support. The following extracts from various letters show where the educational world stands on this matter. Superintendent Jones, of Cleveland, Ohio, is not in favor of federal subsidies and believes that the proper sphere of activity of a federal agency can be described under five divisions, as follows:

1. Executive co-ordination. The head of this department would have in charge the co-ordination of state departments nation-wide.

2. A department of research. This needs no explanation.

3. A department of finance. In this department there should be a permanent body organized for the study of taxation for education.

4. A department of public welfare.

5. A department of international education.

Professor Works, of Cornell University, writes as follows:

I favor the establishment of a department of education with a secretary in the president's cabinet without further provision for subsidy for education. The reasons for such a department that make a strong appeal to me are:

1. Such a department could render material assistance in meeting the greatest need of education today—a scientific study of its wide range of problems. This help might be given by assisting in the co-ordination of efforts that are now under way or may be projected in the future, by the stimulation of existing agencies, and by its own studies. No greater assistance could be rendered public education.

2. From the evidence at hand the administration of the federal vocational education act is an unfortunate condition. The administration of this act could and should be transferred to a department of education. This transfer would not only make provision for proper administration of the act, but also make readily possible co-ordination of this work with other phases of public education.

3. The present move for a reorganization of the activities offers an opportunity for the transfer to a department of education of activities of an educational character that are being conducted by other departments. An excellent illustration is afforded by the boys' and girls' club work which is administered by the Department of Agriculture. This work is, or should be, primarily educational. At present it is conducted by the Department of Agriculture through the system of land-grant colleges, and, as a result, conflicts are to be found in many states between its administration and the work of state and local school authorities.

In my judgment it will be very unfortunate if those interested in the cause of education are not able to arrive at some plan for securing the benefits that are certain to issue from the establishment of a federal department of education, regardless of subsidy.

Superintendent Snyder, of Jersey City, New Jersey, writes:

I have refrained from answering your letter of November 14, 1921, because I have serious doubts as to the advisability of advocating the passage of legislation regarding education. In this state we have sufficient laws in force requiring the appropriation of such sums as may be needed for the purposes aimed at in the congressional bills as proposed. It may be said, therefore, that we do not need congressional legislation. We ought not, however, to appear provincial and to think of ourselves alone; but, as the co-operation of the states is necessary in order to participate in the congressional appropriations, it is by no means certain that the national aid, as proposed, will be given to the sections most needing it.

I am, of course, strongly in favor of any measure which emphasizes the supreme importance of education, because that is the most important function of government. If, for this purpose, it is proposed to establish a national department of education without any appropriation of moneys to the states, it is not at all certain that the purpose will be accomplished or that the department will be more important in its influence on education or have greater prominence than the present Bureau of Education. That will depend entirely upon the activity and prestige of the men at the head.

President Seerley, of Iowa State Teachers College, writes:

From the beginning of the first seeking for appropriations for subsidies for education from the United States Treasury by the original Burkett Bill for assisting state normal schools, I have regularly insisted that financial problems and administrative problems should not be combined in the same congressional proposition. I am sure that the friends of the nationalization of education, either by absorption or by state co-operation, will not succeed in securing the adoption of any plan that confuses principles of government with expenditures of government. No congress can wisely provide means for carrying out a great plan until that plan has been adopted and the metes and bounds comprehended. The proposed establishing of education as a department of American executive government should not have any subsidiary questions to interfere with its full and fair consideration. A minor problem should not be combined with a major problem, as such a plan reacts against a proper decision.

Superintendent Lewis, of Rockford, Illinois, makes this statement:

I do not believe in the national government making subsidies to the various states at the present time. I believe that it is wiser for the federal government to organize a department of education with a cabinet officer without subsidies to the states. This national department of education could and should perform a great many services, many of which are being performed by the present Bureau of Education. All of the objects for which subsidies were requested are, of course, worthy objects, but we cannot expect the national government at the present time to do a great deal along these lines. I believe the new department should grow into its job in the same way as the Department of Labor and the Department of Commerce have grown into theirs.

President Kinley, of the University of Illinois, writes:

I believe that there is a wide field of usefulness for such a department in the way of setting standards, furnishing information that cannot otherwise be obtained, and taking action in some lines as the representative of the states or their educational departments, where they are all agreed on the kind of action to be taken but the line of action is such that no one wishes to take the initiative.

In my opinion, there is no fundamental objection to the principle of federal aid to education, but that aid should be given to the legislatures of the states directly, without condition, as was the case in the establishment of the land-grant colleges. It should not be a bribe on the fifty-fifty plan to establish particular kinds of work. Even with all express intimations of federal control eliminated from the law, mere administrative action will in time tend to influence, if not to dominate, state educational policy. This has been the experience of the land-grant colleges in agriculture. It is a mistake to assume that the relations of the Department of Agriculture to the land-grant colleges and the experiment stations furnish an entirely safe guide for the establishment of similar relations in education. The tendency to dominate has been persistent even there.

There are some who believe that the way to deal with the disagreements of the type revealed by these letters is to insist that those in the minority suppress their views. Of course, it is not yet certain who constitute the minority. We are told, for example, that the friends of the parochial schools will oppose any bill which gives money to public schools. We are told that there will be powerful influences put in motion by the parochial schools to defeat the department. The answer made by some people to these statements is to call all who do not favor appropriations enemies of public schools.

Is it not the part of greater wisdom to seek grounds of agreement? The writer has in his possession a letter from an influential Catholic educator favoring a department of education of the research-advisory type, similar to the Department of Agriculture. The author of this letter does not care to be drawn into public expression of his views. Is it not likely that a large group of those who are supposed to object to this or that phase of the measures now before Congress could be made enthusiastic advocates of some good and reasonable measures?

It may with propriety be added that the letter from the Catholic educator is not the only one which was marked as purely personal and not for publication. There is a considerable collection of Protestant correspondence which voices, sometimes with evident pangs of conscience, the confession that the authors do not care to come out in the open while the proponents of certain measures are so free with their vituperation of those who do not answer to the lash.

All this seems to the present writer fundamentally contrary to the modern scientific view of what education is and ought to be. Education is a great force in national and community life. It is not a partisan issue or a cult. Its issues are public issues. The educator is a public servant, and his best wisdom belongs to those whom he serves. If the present issues are to be settled wisely and justly, they must be discussed frankly and fully, and the public must be given an opportunity to understand what is being decided. It is a grave issue whether Congress is to set up a scientific department of education or an administrative department. This grave issue cannot be covered up by any shouting about general agreement as to the need of a department. When Congress acts, it will act on some particular kind of department. If the particular kind of a federal educational agency outlined in any particular bill is opposed by strong forces, we may find that the department itself will be lost because the major issues were obscured in all the preliminary stages of the campaign.

TYPES OF ARITHMETIC NEEDED IN CERTAIN TYPES OF SALESMANSHIP

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The investigation here reported was undertaken in an attempt to gain a reliable index of the type of arithmetic needed by the clerk in selling goods and by the consuming public in purchasing goods. The problem consists in the analysis of 4,661 bills of sale, representing a total value of $41,560.67, from three large stores in the city of Seattle, Washington—a wholesale and retail hardware store, a department store, and a wholesale and retail grocery store. Table I shows the distribution of the bills and their value.

TABLE I

NUMBER OF BILLS OF SALE AND THEIR VALUE

	Number of Bills	Value
Hardware store	978	$21,330.15
Department store	3,477	18,144.16
Grocery store	206	2,086.36
Total	4,661	$41,560.67

The bills from the hardware store represent the total sales for three consecutive days; the bills from the department store, the "cash delivery" sales for seven consecutive days; the bills from the grocery store, a random selection from the files in which accounts are kept.

METHOD

In analyzing these bills of sale, everything was considered a problem which involved any calculation. The problem might involve multiplying the number of articles purchased by the price, as two dozen shovels at $8.50 per dozen, or it might consist in finding the total sum from the itemized cost of the articles. Items involving fractions or discounts often consisted of more than one

problem. To illustrate, one item of a bill was "75 lbs. wire at $5.05 cwt." The problem involved might be worked by multiplying $5.05 by 75 and pointing off two places, making one problem in multiplication (a three-place number multiplied by a two-place number); or the problem might be solved by multiplying $5.05 by 3 and dividing the result by 4, thus making two distinct problems (a three-place number multiplied by a one-place number, and a four-place number divided by a one-place number); or it might be solved by dividing $5.05 by 2 and the result by 2 and adding the quotients, making two problems in division (a three-place number divided by a one-place number in each case) and one problem in addition (three-place numbers with two addends). There were few items permitting as many solutions as the one just cited. In all such cases the easiest solution was arbitrarily selected, unless the computations on the bill indicated that some other method had been followed. When a bill involved copying but no actual arithmetical operations, e.g., "1 doz. dust pans @ $1.15 doz. . . . . $1.15," it was not counted as a problem and hence is not considered in the final results.

RESULTS

Analysis of addition problems.—The results of analyzing the addition problems taken from the bills of sale from the hardware store show that the most common of these problems involve only three-place or four-place numbers. The problems were tabulated according to the largest number of places which occurred in any addend. Thus, "497 three-place numbers to be added" might be interpreted to mean all addends consist of numbers with three places or that some of the addends contain numbers with three places and other addends contain numbers with one or two places. The surprising thing about the results shown in Table II is the lack of problems having as many as five places in the numbers to be added.

Table III shows that the problems in addition involved in the bills from the hardware store usually contain but two, three, or four addends. However, it is noted that eighty-eight problems have from eleven to fifteen addends, thirty-four problems from

sixteen to twenty addends, and fifteen problems have over twenty addends.

Table IV presents a more detailed analysis of the data secured from the department and grocery stores. These data indicate, as do the distributions shown in Tables II and III, that the most common problems in addition contain three-place numbers with only two addends. In general, the clerk will be called upon to

TABLE II

DISTRIBUTION OF PROBLEMS IN ADDITION FROM THE HARDWARE STORE ACCORDING TO THE LARGEST NUMBER OF PLACES IN ANY ADDEND

Number of Places	Number of Problems
One	16
Two	136
Three	497
Four	310
Five	26

TABLE III

DISTRIBUTION OF PROBLEMS IN ADDITION FROM HARDWARE STORE ACCORDING TO THE NUMBER OF ADDENDS INVOLVED

Number of Addends	Number of Problems	Number of Addends	Number of Problems
Two	366	Eight	28
Three	199	Nine	25
Four	104	Ten	19
Five	57	Eleven to fifteen	88
Six	46	Sixteen to twenty	34
Seven	29	Over twenty	15

add more three-place numbers than any other type. This table also reveals several problems with from ten to eighteen addends, a tendency more marked in the hardware and grocery store bills.

Analysis of subtraction problems.—Table V shows that most of the problems in subtraction involve three-place or four-place numbers. No problem is recorded as including numbers of more than five places. It is interesting to note that subtraction is used but once in the 206 bills of sale from the grocery store. This is due to the fact that in this store the clerk makes out and totals the bill but a central cashier receives the money and makes change.

TABLE IV

DISTRIBUTION OF PROBLEMS IN ADDITION FROM THE DEPARTMENT STORE AND GROCERY STORE BILLS ACCORDING TO THE NUMBER OF PLACES IN THE ADDENDS AND THE NUMBER OF ADDENDS

Highest Number of Places	Department Store	Grocery Store	Total
Two:			
Two addends	91	11	102
Three addends	21	0	21
Four addends	9	4	13
Five addends	4	1	5
Six addends	9	2	11
Seven addends	3	0	3
Eight addends	1	0	1
Nine addends	0	1	1
Ten addends	0	2	2
Eleven addends	1	0	1
Three:			
Two addends	311	70	381
Three addends	67	22	87
Four addends	17	11	28
Five addends	10	4	14
Six addends	4	2	6
Seven addends	4	8	12
Eight addends	4	3	7
Nine addends	1	6	7
Ten addends	3	2	5
Eleven addends	2	3	5
Twelve addends	1	1	2
Thirteen addends	0	2	2
Fifteen addends	0	1	1
Sixteen addends	0	2	2
Seventeen addends	0	4	4
Four:			
Two addends	31	7	38
Three addends	11	6	17
Four addends	2	1	3
Five addends	0	2	2
Six addends	0	3	3
Seven addends	1	2	3
Eight addends	0	1	1
Nine addends	1	1	2
Ten addends	0	1	1
Eleven addends	0	1	1
Twelve addends	0	1	1
Fifteen addends	0	1	1
Sixteen addends	0	1	1
Seventeen addends	0	3	3
Five:			
Eighteen addends	0	2	2

Analysis of multiplication problems.—Table VI shows that most of the problems in multiplication have one-, two-, or three-place numbers multiplied by one-, two-, three-, or four-place numbers.

A vast majority of the multiplication problems can be reduced to the form of a two-place or three-place number multiplied by a one-place or two-place number. The process reverses the multiplier and the multiplicand as indicated in the table, but this is usually done in actual life. For example, if a customer buys three pen

TABLE V

DISTRIBUTION OF PROBLEMS IN SUBTRACTION ACCORDING TO THE LARGEST NUMBER OF PLACES IN THE MINUEND

Number of Places in Minuend	Hardware Store	Department Store	Grocery Store	Total
Two	130	155	0	285
Three	640	1,412	1	2,053
Four	205	756	0	961
Five	11	4	0	15

TABLE VI

DISTRIBUTION OF PROBLEMS IN MULTIPLICATION ACCORDING TO THE NUMBER OF PLACES IN THE MULTIPLICAND AND MULTIPLIER

Problem	Hardware Store	Department Store	Grocery Store	Total
1×1	9	2	0	11
1×2	447	562	330	1,339
1×3	659	197	41	897
1×4	58	2	0	60
1×5	1	0	0	1
2×2	410	130	85	625
2×3	824	59	6	889
2×4	241	22	0	263
2×5	2	0	0	2
3×3	91	0	0	91
3×4	23	0	1	24
5×2	6	0	0	6

knives at $1.25 each, the problem might be listed as a one-place number multiplied by a three-place number, but usually we think of multiplying $1.25 by 3. This problem would thus be classified as involving the multiplication of a three-place number by a one-place number. Notwithstanding the method of interpreting the number of places in the multiplicand and multiplier, it seems clear that a very small amount of multiplication is involved in the buying or selling of goods at these stores.

Analysis of division problems.—Table VII is ample evidence that division is used even less than multiplication. By far the most common problems in division involve either two or three places in the divisor and in the dividend. The relatively few problems in division in comparison with the number in addition and multiplication is very striking. It is also noted that almost all of the division problems are taken from the bills of sale from the hardware store. This is probably due to different practices in marking and selling goods. Many hardware commodities are priced in lots, as "per dozen," "per gross," "per cwt.," etc., but may be sold in broken

TABLE VII

DISTRIBUTION OF PROBLEMS IN DIVISION ACCORDING TO THE HIGHEST NUMBER OF PLACES IN EITHER DIVIDEND OR DIVISOR

Problem	Hardware Store	Department Store	Grocery Store	Total
1÷1	1	3	1	5
1÷2	37	16	13	66
1÷3	35	0	0	35
2÷2	64	4	4	72
2÷3	223	0	0	223
2÷4	3	0	0	3
3÷3	202	0	1	203
3÷4	47	0	0	47
4÷4	2	0	0	2

lots at the regular fractional rate. Many commodities in the department and grocery stores are priced at so much per article or per number of articles and are sold on either basis or on a combination of both. To illustrate, at the hardware store an individual purchases one-half dozen cow chains at $2.75 per dozen and pays $1.38. This indicates that the price per dozen was divided by 2. At the department store an individual buys eight linen collars, priced 25 cents each or $1.40 for a half-dozen, and pays $1.90. This indicates that he pays for six of his collars at the half-dozen rate and for 2 of them at the rate per article. In making the suggested transaction at the hardware store division is involved, but in making the department-store purchase the result is obtained by multiplying 25 cents by 2 and adding the product to $1.40. Some articles in the hardware store are sold on the same basis as

those in the department store, while in a few instances the practice in the department store is the same as in the hardware store. In the grocery store, the practice of pricing at so much per article or per number of articles is almost universal. Such a practice eliminates the necessity for the process of divison, shortens and simplifies the method of computation, and reduces the possibility of error.

Analysis of problems involving fractions.—Table VIII exhibits the nature of the problems in multiplication which involve the use of fractions in their solutions. The first column shows that only those fractions are used whose denominators are 2, 3, 4, 5, 6, 9, 10, 12, 16, 24, and 144. The last column shows that the most commonly used fractions are halves, fourths, twelfths, and sixths. Twelfths are used frequently because the dozen is the unit in the sale of many articles in the hardware business. For instance, wholesale customers buy so many dozens or so many twelfth parts of a dozen articles. At times the fractional part of a dozen is not reduced to its lowest terms but is expressed as $\frac{2}{12}$ or $\frac{10}{12}$. Comparisons indicate extensive use of fractions in the hardware store and little use of them in the grocery store.

It should be added that the use of fractions is necessitated because of the quantity of goods bought rather than on account of the price at which the goods are sold. One of the managers of the department store concerned says that the day is gone when goods can be purchased at $8\frac{1}{3}$ cents a pound or $33\frac{1}{3}$ cents a yard and that at present goods are marked in whole numbers and to a great extent in units of the decimal system. Thus, instead of $8\frac{1}{3}$ cents a pound, the selling price is likely to be either 5 cents or 10 cents, and instead of $33\frac{1}{3}$ cents a yard, the price is likely to be either 30 cents or 35 cents. This practice reduces greatly the use of fractions in computing the selling price of goods and is in keeping with the long-established custom of not selling goods in abnormal and unreasonable fractional portions such as a third of a pound or a ninth of a yard.

But even with these tendencies at work, Table VIII gives considerable evidence that much practice should be given in multiplying two-, three-, and four-place numbers by the commonly used simple fractions and also in multiplying two-, three-, and four-

TABLE VIII

DISTRIBUTION OF PROBLEMS INVOLVING MULTIPLICATION OF FRACTIONS ACCORDING TO THE NUMBER OF PLACES IN THE MULTIPLICAND AND THE NUMBER OF PLACES AND THE PARTICULAR FRACTION IN THE MULTIPLIER

MULTIPLIER	MULTIPLICAND												TOTAL
	One Place			Two Places			Three Places			Four Places			
	H.S.	D.S.	G.S.	H.S.	D.S.	G.S.	H.S.	D.S.	G.S.	H.S.	D.S.	G.S.	
2/144	0	0	0	0	0	0	2	0	0	0	0	0	2
1/24	0	0	0	0	0	0	3	0	0	2	0	0	5
1/20	0	0	0	0	0	0	0	0	0	2	0	0	2
1/12	0	0	0	6	0	0	147	0	0	116	0	0	269
1/10	0	0	0	0	0	0	7	0	0	11	0	0	18
1/8	0	0	0	5	1	0	0	2	0	1	0	0	9
1/6	0	0	0	10	0	0	140	7	0	69	0	0	226
2/12	0	0	0	0	0	0	1	0	0	0	0	0	1
1/5	0	0	0	0	0	0	0	0	0	1	0	0	1
1/4	0	0	0	21	7	0	141	7	2	72	0	0	250
1/3	0	0	0	7	1	0	40	11	0	21	0	0	80
5/12	0	0	0	1	0	0	6	1	0	1	0	0	9
3/8	0	0	0	0	0	0	0	1	0	0	0	0	1
1/2	1	0	0	43	19	9	333	56	25	63	1	1	551
2/12	0	0	0	0	0	0	1	0	0	1	0	0	2
3/5	0	0	0	0	0	0	0	0	0	1	0	0	1
5/8	0	0	0	0	2	0	0	0	0	0	0	0	2
2/3	0	0	0	0	1	0	6	2	0	3	0	0	12
3/4	0	0	0	3	13	0	4	5	0	3	0	0	28
5/16	0	0	0	1	0	0	0	0	0	0	0	0	1
7/8	0	0	0	0	3	0	0	0	0	0	0	0	3
10/12	0	0	0	0	0	0	2	0	0	0	0	0	2
11/12	0	0	0	1	0	0	0	0	0	0	0	0	1
15/16	0	0	0	0	2	0	0	0	0	0	0	0	2
One place:													
1/8	0	0	0	0	6	0	0	0	0	0	0	0	6
1/4	0	0	0	4	46	4	0	12	1	0	0	0	67
1/3	0	0	0	2	14	1	1	1	0	0	0	0	19
3/8	0	0	0	0	2	0	0	0	0	0	0	0	2
4/9	0	0	0	1	1	0	0	0	0	0	0	0	2
1/2	1	4	0	23	129	18	9	29	1	2	0	0	216
5/9	0	0	0	1	1	0	0	0	0	0	0	0	2
5/8	0	0	0	0	1	0	0	0	0	0	0	0	1
2/3	0	0	0	1	9	0	2	3	0	0	0	0	15
3/4	1	0	0	5	23	5	1	7	0	0	0	0	42
7/8	0	0	0	2	3	1	2	0	0	1	0	0	9
11/12	0	0	0	0	0	0	0	0	0	1	0	0	1
Two places:													
1/8	0	0	0	1	1	0	0	0	0	0	0	0	2
1/6	0	0	0	0	0	0	0	0	0	1	0	0	1
1/4	6	0	0	16	3	0	1	0	0	1	0	0	27
1/3	2	2	0	2	1	0	12	0	0	1	0	0	20
1/2	24	30	3	60	21	19	15	4	4	9	0	0	189
7/12	0	0	0	0	0	0	1	0	0	0	0	0	1
2/3	0	0	0	0	2	0	0	0	0	0	0	0	2
3/4	5	0	0	7	1	2	2	0	0	0	0	0	17
11/12	0	0	0	0	0	0	3	0	0	1	0	0	4

TABLE VIII—*Continued*

Multiplier	Multiplicand												Total
	One Place			Two Places			Three Places			Four Places			
	H.S.	D.S.	G.S.	H.S.	D.S.	G.S.	H.S.	D.S.	G.S.	H.S.	D.S.	G.S.	
Three places:													
1/4	0	0	0	0	0	0	1	0	0	0	0	0	1
1/2	0	0	0	0	0	0	1	0	1	0	0	0	2
7/12.....	0	0	0	0	0	0	0	0	0	1	0	0	1
2/3	0	0	0	0	0	0	1	0	0	1	0	0	2
Four places:													
1/3	0	0	0	0	0	0	0	0	0	1	0	0	1
Five places:													
2/3	0	0	0	0	0	0	0	0	0	1	0	0	1

place numbers by mixed numbers with one, two, and three places and the commonly used simple fractions.

While this investigation shows that many multiplications involving simple fractions are made, it does not show much use of fractions in the other fundamental operations. There are just a few instances of addition of fractions, e.g., $4\frac{2}{3}+4\frac{1}{3}$ or $1\frac{1}{2}+\frac{1}{4}+\frac{3}{4}$, but such cases are so rare that no tabulation of them is made. Likewise there is no demand for subtraction of fractions, for the selling price of each item is determined separately and does not involve the use of fractions. All cases involving division of fractions might well be treated as special cases of multiplication of fractions, but the problems which represent what are called problems in division of fractions are recorded separately. In the enumeration of them the whole numbers represent the number of places in the dividends and divisors respectively and the fractions represent the actual fractions in the respective dividends or divisors. The problems are: $3\div 3-\frac{1}{4}$, $3\div 1-\frac{2}{3}$, $2+\frac{7}{12}\div 3$, $3+\frac{2}{3}\div 3$, $2+\frac{1}{2}\div 3$, $2+\frac{1}{12}\div 3$, $4+\frac{1}{3}\div 3$, $3\div 3+\frac{1}{2}$, $3\div 1+\frac{1}{2}$, and $3\div 2+\frac{1}{6}$. These problems are all very simple, and the fractions are the same as those commonly used in multiplication. The possible reason assigned for little use of addition and subtraction of fractions will probably account for the little use of division of fractions.

It seems evident that a definite knowledge of how to multiply simple fractions is absolutely essential in successful salesmanship of the type under consideration and that if the purchaser is to

protect his own interests it is equally important for him to have this same ability.

Analysis of denominate numbers.—The importance of fractions is emphasized by an analysis of the use of denominate numbers. Denominate numbers as such, i.e., reduction from one denomina-

TABLE IX

REFERENCE TO THE DOZEN AS A UNIT

Number of Dozen	Hardware Store	Department Store	Grocery Store	Total
1/12	351	0	0	351
1/6	206	1	0	207
2/12	1	0	0	1
1/4	229	0	0	229
1/3	61	4	0	65
5/12	8	0	0	8
1/2	413	36	0	449
7/12	2	0	0	2
5/6	2	0	0	2
10/12	2	0	0	2
1 to 5	638	17	60	715
Over 5	19	0	5	24

TABLE X

REFERENCE TO THE GROSS AS A UNIT

Number of Gross	Hardware Store
1/24	4
1/6	23
1/4	9
1/3	8
1/2	5
50/144	2
5/12	1
7/12	1
1 to 5	135
Over 5	7

tion to another, are not used at all in the transactions involved, but suitable units of measure such as dozen, yard, pound, foot, inch, bale, pair, etc., and fractional portions or multiples of these units are extensively used. Tables IX, X, XI, and XII make this clear. Table IX shows that the dozen is used especially in the hardware store and that the amount purchased is expressed in terms of the dozen and not in terms of lower units.

Table X illustrates the tendency to express quantities sold in terms of a particular unit, the gross. No attempt is made to reduce the fractional portions of the gross to dozens.

Table XI emphasizes the same thing with regard to the yard, and here again no attempt is made to express the amounts purchased in terms other than yards and fractional portions thereof. Table XII gives ample evidence that no reduction to higher denominations is made when the foot is the unit of measure. Any attempt to reduce an amount between 50 and 100 feet in length to yards and feet, or to rods, yards, and feet, as might easily be inferred from the table for linear measure, would be uneconomical and ridiculous.

TABLE XI

REFERENCE TO THE YARD AS A UNIT

Number of Yards	Hardware Store	Department Store
1/8	0	2
1/6	0	3
1/4	0	12
1/3	0	8
3/8	0	1
5/12	0	1
1/2	0	31
5/8	0	2
2/3	0	1
3/4	1	18
7/8	0	4
1 to 5	3	517
6 to 10	0	141
10 to 20	0	81

TABLE XII

REFERENCE TO THE FOOT AS A UNIT

Number of Feet	Hardware Store	Department Store
1 to 5	8	3
6 to 15	10	8
16 to 50	35	4
50 to 100	30	1
Over 100	25	0

Similar evidence can be offered in the use of the pound, gallon, inch, ton, or barrel, but the mere statement that in each instance

the practice is to express the amount in fractional or multiple portions of the particular unit under consideration is sufficient. No more attempt is made to reduce these units to higher or lower denominations than is made in the use of keg, box, pan, bench, case, hundred, or thousand.

Analysis of rates of discount.—The rates of discount from the bills of sale from the hardware store are exhibited in Table XIII. This list is much more extended than one would expect and includes many rates such as 2, 23, 28 per cent, etc., which do not conform to the basic tens nor to usual fractional parts of 100. The ten most common rates of discount according to the frequency of their

TABLE XIII

DISTRIBUTION OF RATES OF DISCOUNT

Percentage of Discount	Hardware Store	Percentage of Discount	Hardware Store	Percentage of Discount	Hardware Store
2.....	2	30.....	42	56.....	2
5.....	112	32.....	1	60.....	2
7½.....	6	33⅓.....	13	61.....	1
10.....	134	35.....	39	65.....	15
12½.....	11	40.....	57	66.....	1
15.....	17	43.....	1	70.....	38
20.....	22	45.....	20	75.....	63
23.....	1	50.....	90	80.....	2
25.....	38	51.....	1	85.....	13
28.....	2	55.....	45	87.....	1

use are 10, 5, 50, 75, 40, 55, 30, 35, 25, and 70 per cent. On one occasion the amount of discount is expressed as "one-third off," but in all other cases the rate is expressed in terms of percentage.

Such a wide array of percentages is probably due to the influence of the wholesale trade, as discount is rarely indicated in the retail sales. Since this is true, the knowledge of percentage needed to figure the discounts may be regarded as a specialized knowledge, required only by the hardware clerks who may be called upon to sell goods at wholesale, or by the customers who are buying at wholesale. If these bills are typical, neither the clerk in the department store or grocery store nor the general public, the ultimate consumers of the goods purchased, need have an extended knowledge of percentage. However, no sweeping conclusions should be drawn until investigations involving other lines of business have been made.

The reader no doubt has been impressed by the fact that very little use of arithmetic is demanded of the clerks selling the goods itemized on these bills of sale or of the purchasing public. The little use made of arithmetic in the purchase of goods becomes all the more vivid when it is realized that 945 of the 4,661 bills of sale examined require no computation at all, merely a statement of the quantity and the listed price, e.g., "100 pounds of sugar @ $12.00 cwt." These bills indicate that many people buy a single article at a time at a listed price and that the knowledge of how to make change is all that is needed for completing the transaction. The clerk often does not make use of this knowledge, for he simply makes out a bill and the purchaser pays the cashier. The consumer, however, if he is to protect his own interests, ought to make use of his knowledge of making change in checking the amount given by the cashier.

The lack of the need for arithmetic is again manifest when it is stated that in the hardware store adding machines and comptometers are available for the clerks if the nature of the computations makes these devices desirable. However, in making the ordinary sales these devices are not used. The clerk in the department store has only to set an indicator at the proper selling price, draw the desired amount of goods through the measuring device, read the total sum calculated mechanically as the material is drawn through, and record the total on the bill of sale. In the grocery store extensive use of the computing scale reduces the use of arithmetic to a minimum, i.e., to adding the prices paid for the itemized articles and possibly making the necessary change.

The use of these devices has reduced very materially the amount of arithmetic needed by the clerk but has increased the need for skill in arithmetic on the part of the consuming public. In calculating by the old-fashioned method there was opportunity for the customer to check the figures of the clerk; but when computing devices are used, the cost price is merely stated and if any checking is done to see whether the device is properly set or whether the cost price is properly read it must be done by the consumer himself. Usually this computation must be done mentally and represents a quick judgment in round numbers concerning the accuracy of the transaction. This need for mental arithmetic becomes more emphatic when it is stated that in making this investigation one

grocery store was consulted in which almost all calculations were mental. No bills of sale were made out, and no figuring with pencil was done save where so many articles were purchased that it was difficult to keep them in mind. Where this practice is followed it behooves both salesman and customer to be alert in mental arithmetic.

Another interesting point brought out by this investigation is the absence of the use of decimals except in connection with United States money. Since all these problems are connected with buying and selling, it is natural for United States money to be involved, and the intimate relationship between it and decimals ought to be significant to teachers. The relationship existing between percentage and United States money is equally significant.

CONCLUSIONS

The following statements seem to be warranted from this investigation:

1. The amount of arithmetic actually used in the selling of the goods as listed on the bills of sale is very small. The problems most commonly met in the four fundamental operations consist of adding three-place or four-place numbers having two, three, or four addends; subtracting numbers with four places or less in the minuend; multiplying a three-place number by a one-place or two-place number; and dividing a three-place number by a two-place or three-place number. The most common fractions are halves, fourths, twelfths, and sixths.

2. Multiplication and addition are used much more than division and subtraction. Subtraction as such is very little used except in making change, and then the additive method is commonly used. Many problems in multiplication involving the use of the more frequently used fractions suggest the need for much practice in our schools in multiplying by mixed numbers.

3. The use of measuring and computation devices has reduced the amount of arithmetic used in selling goods, but it has created a demand for a superior knowledge of arithmetic on the part of the consumer in order to provide the ability for checking the accuracy of manipulating the devices. This fact, together with

the fact that some stores utilize mental arithmetic almost exclusively, creates a demand for much mental arithmetic in the schools. This should include drill on the fundamental operations and also in forming quick judgments concerning the accuracy or inaccuracy of probable answers to buying or selling situations of ordinary life.

4. Denominate numbers as such are not used in the buying or selling of goods. Goods are sold in appropriate units and fractional parts thereof, but no attempt is made to reduce from one denomination to another. Since an individual in meeting the complex activities of life may use various units of denomination (e.g., inch, foot, and yard), it seems that there is some justification for a small amount of instruction in denominate numbers even though the actual reduction is not made in business life.

5. Decimals and percentage are always used in connection with United States money, and it would seem folly to isolate them in instruction in the elementary school.

6. It is the usual practice in some stores to price goods at so much per article or per group of articles. In computing the cost of a considerable number of articles, unless the number is an even multiple of the group, the group price is used as a basis for part of the costs and the price per article for the remainder. It would be well for the schools to take cognizance of this fact and to give practice in solving problems of this kind.

7. Since measuring and computing devices are used so extensively and since the children who are to be the consuming public must deal directly or indirectly with them, it seems reasonable to suggest that the school should provide information concerning them and their use. Demonstrations can be given at the school, or the teacher and pupils can visit a store where the devices are used. The aim of such instruction should be to make the children intelligent concerning the devices rather than to give them skill in manipulating them.

8. Since the amount of arithmetic used in the selling of goods is so small the charge often reputed to business men that the children trained in the schools of today are woefully deficient in arithmetic seems incredible. If the children actually are deficient, it

seems that factors other than the ability of the school to impart such training are involved.

9. From the facts disclosed by this investigation it is evident that the school is emphasizing much arithmetic that is unessential in meeting the situations confronted by the salesman and the consuming public. It seems wise to urge the elimination of the unessentials and a concentration upon the types of problems here described. However, this process of elimination must not take place too suddenly, for investigations involving other phases of these same lines of business or other lines of business may show variations in the types of problems encountered. Additional investigations must corroborate and supplement the findings of this study. Until these investigations have been made, the present results must be considered as a suggestive basis upon which to construct a course of study in arithmetic.

A COURSE IN HANDWRITING. III

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In order that the work in handwriting for the first six grades may be described in the space of four articles, it is necessary to present the material in pyramid form. The course for the first grade is given in detail, and the work of each succeeding grade is summarized more and more briefly. Consequently one should be familiar with the course for the earlier grades, particularly the first grade, because the later work is presented in large part as a modification of the earlier exercises.

The present article covers the work of the second and third grades. The treatment of each grade includes the following: (1) a statement of the objectives, materials, and methods; (2) a few illustrative exercises in script, particularly to indicate the size of the letters; and (3) a summary of the content of the exercises by weeks. This summary does not give the detailed daily exercises, as in the case of Grade I, but indicates the new work which is to be covered each week. It is left to the teacher to include appropriate reviews of previous exercises, particularly those which prepare the pupils for the new exercises. Each Friday the exercises of the week should be carefully written on clean paper for permanent record.

GRADE II

Objectives.—The child should be able, at the end of the second grade, to write the following minimum list of words independently and with very little hesitation:

let	little	ball	eat	bad
told	ice	if	of	came
made	one	round	glad	good
long	that	thing	help	open
they	baby	saw	stand	best
sick	take	kind	thank	book
five	gave	have	seven	box
six	blue	table	behind	light
white	plant	anything	house	last
school	spell	afternoon	around	brother

The second-grade child should also learn to write certain proper nouns and to observe certain requirements of form, such as the arrangement of figures in straight columns and keeping within marginal lines.

Movement.—In the second grade the child should acquire a fluency which is represented by a speed of thirty letters a minute, should possess considerable freedom of movement—the hand sliding easily across the page while the letters are being formed—and should adhere rather closely to the standards of bodily position. These standards were laid down in the first article.

Materials.—The paper used in this grade should be unglazed, but of better quality than that used in Grade I. It should have lines five-eighths of an inch apart, so as to provide for large writing. The one-space letters should be one quarter inch high. A medium soft pencil should be used. The blackboard should still be used, particularly for practice on new exercises.

Methods.—In writing at the desk the child's arm should rest lightly and may even slide on the desk as the letters are made.

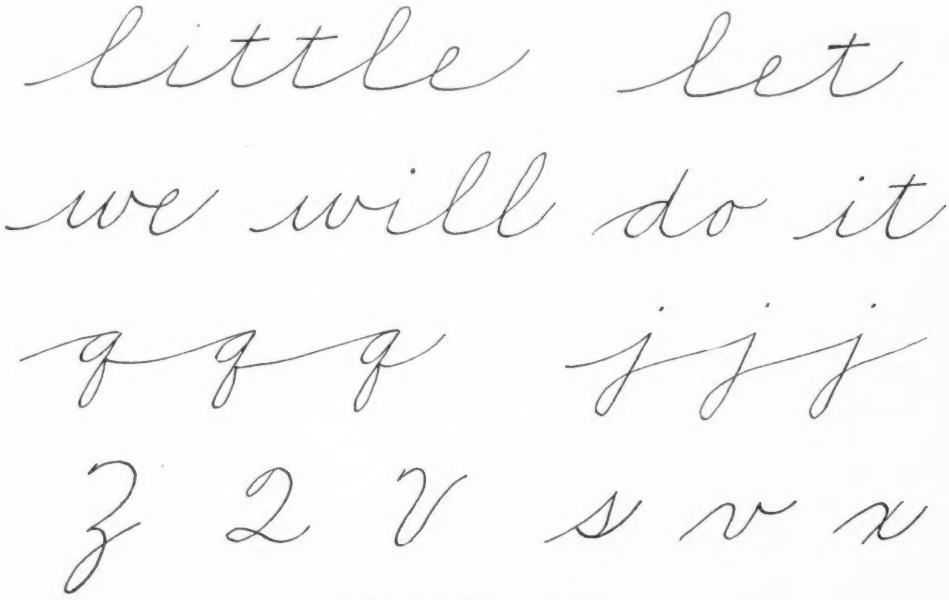
The types of drill used in Grades II and III are similar to those of Grade I but more difficult. The size of the letters is decreased, and the speed of writing is increased. A great deal of supplementary practice should be given with material drawn from other school work.

The child should exercise some criticism of his own work, particularly by comparing different examples of it. The standard in quality is 11 on the Freeman Scale and 35 on the Ayres Scale.

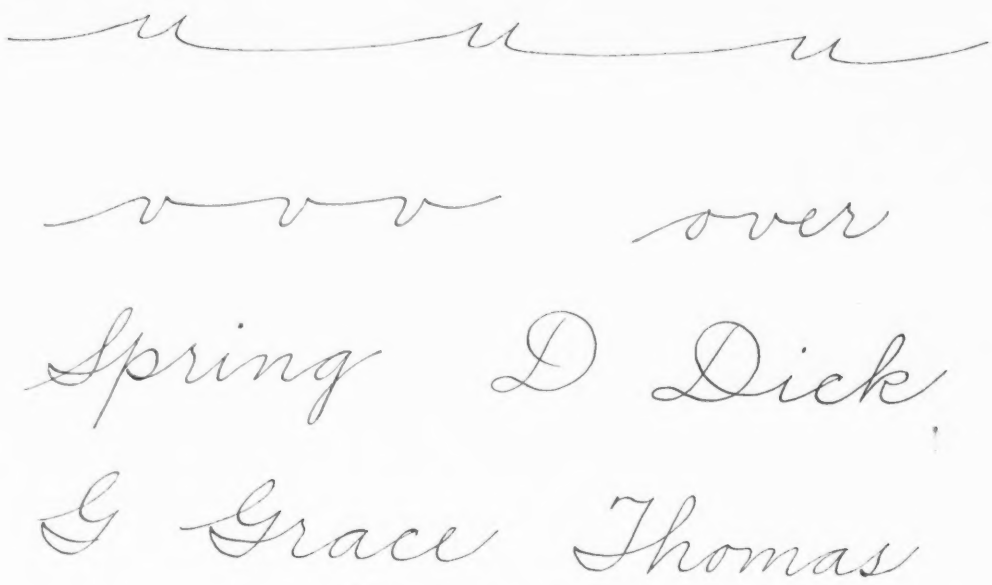
In this grade the letters are introduced in more rapid succession than in the first grade, the period required being twenty weeks instead of twenty-two. Moreover, the words employed are largely different.

The exercises are referred to by number when they are the same as those in Grade I. The list of these exercises was given in the first and second articles.

First week.—The early exercises should be introduced somewhat as in Grade I. Introduce the first six exercises, counting with the voice.



Specimen Exercises for Grade II



Specimen Exercises for Grade III

Second week.—Give Exercises 7 to 10. Add the words *little* and *tell.* In Exercise 8 write three words on a line and follow the same practice in the following lessons when the decreased size of the writing makes room for it.

Third week.—Exercises 12 to 14. Give the numerals also in double columns of six numbers each.

Fourth week.—Exercises 15 (two groups on a line), 16, and 17, and the numerals *6, 7, 8,* and *9.*

Fifth week.—Introduce the metronome at the rate of sixty beats a minute. Exercises 18, 19, 21, 23, and 24, and *tie, eat,* and *did.*

Sixth week.—Exercises 26, 27, 28, 30, and 31, and *told, will, we will do it.*

Seventh week.—Exercise 37 (two groups on a line) and *cold, ice, a cold ice ball, we will eat a little ice.*

Eighth week.—Make a comparison between recent specimens of writing and specimens written early in the year. Review exercises with the metronome at 66. Exercises 39 (two groups of a line), 40, and 42, and *of, if, a bad fall, a little ball of ice, q* (three on a line, joined), *quiet, we will be quiet.*

Ninth week.—Metronome at 66. Exercises 41, 43, 44, 46, 47, 48, and 50, and *come, Am, At, All, came, mile, men, nice, no, noon, not, on.*

Tenth week.—Exercises 52 (two groups on a line) and 53, the letter *z* (two groups of three each, joined), and *Anna, Agnes, buzz, go, gold, good.*

Eleventh week.—Exercises 55 and 60 (two groups on a line) and the words *big, get, glad, he, hand, home.*

Twelfth week.—Metronome at 72. Review words previously practiced and make simple sentences of them. Give a two-minute timed test with memorized material.

The essential steps in giving the test are:

1. Have the children memorize previously some simple passage and write it once or twice for practice.

2. Have papers headed with names of children, date, and grade and instruct the children that they are to take a test and are to write both well and rapidly. Tell them to keep on writing throughout the allotted time.

3. Allow two minutes, keeping time carefully with a watch.

4. Count the letters written per minute and grade the specimens by a scale such as the Ayres Scale for Measuring the Handwriting of School Children, published by the Russell Sage Foundation, or the Freeman Chart for Diagnosing Faults in Handwriting, published by Houghton Mifflin Co.

Thirteenth week.—Exercises 63, 66, 68, and 82, and *help* and *open*.

Fourteenth week.—Exercises 73, 85, and 86, and *y* (three joined), *away, boy, may, I will tell the little boy to come.*

Fifteenth week.—Exercises 74, 75 (two groups on a line), 78, 79, and 80, and as many of the following words as there is time for: *has, side, some, song, yes, after, bring, for, sister, mother, ride, ring, as, is, say, see, side, sit, this, she, was, are, dear, door, for, her, near, or, our, poor, read, red, ride, run, spring, three, train, tree, yard, tour.*

These words may be kept for subsequent practice as they are on the minimum second-grade list. They may be combined into sentences, as, *The dear little boy ran after my sister.*

Sixteenth week —Exercises 89, 90, 93, 94, and 83, and words and sentences containing letters recently practiced.

Seventeenth week.—Exercise 95, the letters *Z*, *j*, and *q*, and words and sentences.

Eighteenth week—Exercises 97, 99, and 87 (joined), and such words and sentences as *brown, vine, five, gave, have, seven, Let Ruth go with you.*

Nineteenth week.—Metronome at 80. Exercises 100, 102, and 103, and *x*. Add appropriate words and sentences.

Twentieth week.—Exercises 96, 104, 105, and 106, the letter *V*, and appropriate words and sentences.

This completes the introduction of new letters in the second grade. The rest of the year may be devoted to practice on review exercises and on correlated material drawn from other subjects. The metronome should be set at 92 as soon as it seems wise. Include practice on all the words given at the beginning of the article.

During the seventh or eighth month some attention should be given to the criticism of the form of the writing. This criticism should be directed to one element at a time. The general directions in the latter part of the second article should be followed.

GRADE III

Objectives.—By the end of the third year the child should be able to write freely any words which he has occasion to use. His writing vocabulary should include, besides the words used in previous grades, such words as the following:

about	boat	low	fell	meet
land	mine	now	began	ago
then	half	child	catch	high
camp	why	south	year	pass
where	across	war	talk	just
ever	near	over	next	build
done	once	mountain	again	belong
bought	teach	people	many	because
church	country	block	know	ticket
every	leave			

In this grade a good habit of arrangement of material on the page and of spacing should be started. The following items should be considered: margin, indentation, distance from the top, and distance between lines and between words. A simple correspondence form should be introduced where need for its use is recognized. The child should be able to write some of the names of the months and should add to his list of commonly used names his own address, the given names of his own friends, and all capitals used in beginning sentences. The child should be able to write numbers up to 100 in any order and in columns, either from copy or dictation. Correct forms should be used for work in addition, subtraction, multiplication with one multiplier, and short division.

Movement.—At the end of the year the form of the child's writing should be as good as at the end of Grade II, and the speed should be forty letters a minute. The introduction of pen and ink in this grade presents a difficulty of such proportions that the child does well to reach by the end of the year the same co-ordination of movement with the new medium which he had previously acquired with the pencil. Habitual free, rhythmic movement should be quite well established in this grade.

Materials.—For the first part of the year pencils and rough-surfaced paper with lines one-half inch apart should be used; for the latter part of the year, paper that will take ink well. Pen-holder of medium size with cork or rubber tip. Pen with rounded point.

Methods.—1. Position: A reasonably correct position should be maintained now from habit.

2. Types of exercises: (*a*) It is no unusual occurrence for the introduction of pen and ink to result in breaking down a formerly satisfactory co-ordination. In view of this fact, exercises to encourage free rhythmic movement are especially desirable in this grade. These exercises should always be presented by the teacher on the blackboard, and the timing should be clearly illustrated. The motivation in this drill should consist in the child's desire to do well the writing which he is required to do in other subjects, as spelling or written composition. (*b*) Much of the practice in the writing period should be on words which are derived from necessary written work in other subjects. (*c*) The speed of the writing should be increased from time to time by increasing the speed of the metronome. In the last three months of the year *speed drills* may be introduced in which the class for a short time writes familiar exercises at a speed greater than usual. This should never be carried so far as to interfere with co-ordination. (*d*) Pupils should be encouraged consciously to "carry over" the habits of the writing period to writing done in other subjects.

3. Standards and criticism: Continue the development of a critical attitude, having each child compare specimens of his own work, discuss good points in the work of others, and analyze the difficulties in the copy as given by the teacher. Introduce the terms *letter formation* and *spacing* and make a special study of these elements, adding them to the three elements, *uniformity of slant*, *uniformity of alignment*, and *quality of line* which were introduced in Grade II.

The standard in quality for this grade is 14 on the Freeman Scale and 45 on the Ayres Scale; in speed, forty letters a minute.

The character and the order of the exercises in Grade III are so different from Grade I that they will be described without making the direct reference which was made in presenting the work of Grade II. The illustrations of the exercises of Grade I should be referred to, however, in order to become acquainted with the form and arrangement of the letters and words and to learn where the

count comes. As in the case of Grade II, a few illustrative exercises are given to show the size of the writing and to exemplify a few relatively new types of exercise.

As in the case of Grade II, only the new exercises for each week are given. The old exercises are to be reviewed, as illustrated for Grade I, emphasizing those which are similar to those about to be introduced.

First week.—The introductory drill is to be carried out, much as in Grades I and II, by the use of Exercises 1 to 4. These drill exercises are also to be used frequently during the later weeks before giving the new exercises. In Grade III the first seven exercises of Grade I are to be given the first week. In Exercise 5 the strokes should be crossed, making *t*'s. The *l*'s of Exercise 7 should be spaced less widely so as to cover but half a line. A new exercise, *tut* (three on a line), should be inserted between Exercises 6 and 7. The size of the writing for this grade is illustrated.

A formal test should be given at the end of the first week and at intervals throughout the year. Such a repetition makes it possible to trace the progress made in both speed and quality.

Second week.—Give *tie* (three on a line), four *l*'s, *let, tell,* three *b*'s joined (half-line), *bell* (three on a line).

In introducing new letters hereafter have them written in groups of three joined, two groups on a line. Have the new lessons of the week written on a clean sheet each Friday to be kept for comparison.

Third week.—Give the digits, three a day for three days; the letter *a,* joined and separate; and *eat, late, table.*

Fourth week.—Review previous exercises with shorter swing or narrower spacing. Give especial instructions on arrangement on the page and margins. Give *d* and *led.*

Fifth week.—Use the metronome set at 84. Practice writing numbers 1 to 500, three columns, four deep. Leave space equal to the width of a digit horizontally and half the height of a digit vertically. Give *o, lot, boat, about, w, bow, low, a, Ada, At, Abbie.* Whenever capital letters are introduced, give the names of any children in the class which begin with these letters.

Sixth week.—Practice writing numbers in form for subtraction. Have the operation performed and the answers written. Give *c, cut, cat, cab, E, Ella, Etta, Ed.*

Seventh week.—Give attention to margins. Give *q, quiet, c, call, coat, m, meet, me, met, mat, mate, time, n, into, land, mine, now.*

Eighth week.—Dictate digits to be written in long columns. Review subtraction form. Compare in class Friday's work with that of earlier weeks. Give *O, Out, On, Oct., Ada told Etta about a boat.*

Ninth week.—Metronome at 88. Give *z, fizz, buzz, g, good, age, ago, began, h, then, half, child, catch, high, them, Ada can catch the little child.*

Tenth week.—Give *B, I, J,* and proper names beginning with these letters.

Eleventh week.—Give *p, camp, put, M, N, P,* and proper names.

Twelfth week.—Use sentences drawn from other work, but avoid capitals not yet practiced. Give a timed test on Friday.

Thirteenth week.—Set metronome at 96. Give *W, Z, y,* and *s,* introducing the *s* by Exercise 74 of the course for Grade I.

Fourteenth week.—Use the time during this week to make detailed comparisons between the writing of the class now and at the end of the second month. Point out improvements and have the children write review exercises, striving to improve still more. Include also practice upon sentences drawn from other school work.

Fifteenth week.—Give *Y, You, Yes, k, j, R,* and appropriate names and sentences to give practice on these letters.

Sixteenth week.—Give *v, over, never, x, fix, next, L,* and related sentences.

Seventeenth week.—Metronome at 104. Give *S, Spring, Summer, G, Grace, George,* and sentences. Give practice in writing numbers for multiplication, drawing examples from the arithmetic work.

Eighteenth week.—Renew attention to the arrangement of material on the page, especially to margins and indentation. Give *H, K,* and names.

Nineteenth week.—Give *D, F, U, V, X,* and appropriate names and sentences.

Twentieth week.—Give practice in writing examples in short division. All the new letter exercises have now been introduced. Spend the rest of the time of this week in reviewing exercises which especially need it or in writing material for other classes.

Twenty-first week.—Introduce the use of pen and ink. Give instruction on the use of the pen, removing the oil film, holding the pen level so that the points press evenly, using a light pressure, leaving the pen clean, etc. Practice at first only with review exercises.

Twenty-second week.—Metronome at 112. In addition to review exercises give practice on words drawn from the spelling work.

Twenty-third week and following.—Begin examining the form of the writing and grading it according to the qualities represented on the analytical chart, as in Grade II. In this grade include all five qualities or categories and devote one week to each. Toward the end of the year give a timed test and compare the scores with the preceding ones.

[*To be concluded*]

DOES INTELLIGENCE TELL IN FIRST-GRADE READING?

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Like many other cities, Cleveland has been interested in the possibility of effecting economies through better classification of children. If the differences in the amount of progress that pupils can make are very large, it would seem wise to consider seriously the advisability of segregating on the basis of ability. Groups could then be expected to advance accordingly. The present study gives some results of an effort to determine whether the reading attainments of different first-grade groups are at all closely related to their intelligence. These groups were tested for intelligence in October, 1920, with the Pressey primer scale. In some cases the pupils were grouped on the basis of this test. In a number of other cases the children had been previously grouped on the basis of teachers' estimates. In May, the children were tested with the Haggerty reading test for primary grades.

Table I shows the comparative records of intelligence and reading scores of the classes that made up the bright, medium, and slow groups.

The results reveal the greater "going power" of bright-group classes in rather pronounced fashion. The difference in the reading ability between the bright and slow groups, as indicated by Test I, represents nearly three-fourths of a year's growth. Measured by Test II, it is more than a whole year. When such differences appear at the end of one year, there seems to be little doubt as to the wisdom of a policy of segregating entering pupils on the basis of their most probable rates of progress. The results show not only that it is possible to single out quite early in the year those pupils who for the most part are likely to make rapid progress, but that both intelligence tests and teachers' estimates are valuable aids.

The outcome of the tests shows the need of establishing different standards of attainment. For the best groups to do only what is

expected of average children is to allow them to dawdle. Haggerty found that first-grade children from various cities average 4.0 on Test I and 2.0 on Test II. We find now that our bright classes more than double these scores. Their record places them on a par with ordinary children one-half year older. Slow groups, on the other hand, were not able to reach the standard for average children, and in all probability should not be expected to do so. We must not expect the impossible of the teacher in charge of such classes. The figures given will serve as a rough index of what may reasonably be expected of bright and slow sections by the end of the first year's work.

TABLE I

READING SCORES OF THREE GROUPS OF PRIMARY PUPILS CLASSIFIED ON THE BASIS OF INTELLIGENCE

GROUP	NUMBER OF CLASSES	NUMBER OF PUPILS	MEDIAN AGE OF PUPILS	PRESSEY SCORE	HAGGERTY READING SCORE	
					Test I	Test II
Bright	16	344	7 years, 0 months	Above 55	8.8	5.7
Medium	18	331	7 years, 2 months	40–55	5.7	2.8
Slow	17	317	7 years, 1 month	Below 40	3.1	0.9
Total	51	992				
Average					5.9	3.1
Standard:						
Grade I					4.0	2.0
Grade II					12.0	6.0

We may well ask whether the results do not show that the children as a whole did better work because of the advantages of being among others of their own caliber. On the basis of theory, such should be the case. When first-grade children vary in ability so widely that a portion of the class is to another portion as a I A grade is to a II B grade, or even II A, it is unreasonable to expect that all will receive the kind of instruction they need. It is not possible to say to what extent good records are due to homogenous grouping and to what extent they are due to superior teaching. The average of the three groups, however, is considerably above the averages found by Haggerty. The Cleveland children tested, who

had been segregated on the basis of ability, read much better than his standards. The detailed record of classes shows that thirty-one of the fifty-one classes in each test scored above the standards. To be able to say that the success was due to sectioning would have required that we measure the reading ability of an equal number of children who were of the same general capacity, under equally competent teachers, but who had not been grouped. The presumption, however, is decidedly in favor of grouping.

Some of the administrative advantages that accrue from the classification of pupils according to ability are pointed out in an unsolicited letter from the principal of one school.

TABLE II

SCORES OF THE BEST AND THE POOREST CLASSES ON THE PRESSEY INTELLIGENCE TEST AND THE HAGGERTY READING TESTS

	BRIGHT GROUP		MEDIUM GROUP		SLOW GROUP	
	Best Class	Poorest Class	Best Class	Poorest Class	Best Class	Poorest Class
Pressey intelligence test...	64.5	63.5	52.5	42.0	37.0	10.5
Haggerty reading tests:						
I.....	11.3	3.2	13.5	3.3	8.5	0.8
II.....	8.0	1.8	3.9	0.8	6.4	0.5

Our three schools of I B's were given an intelligence test last semester and classified accordingly. When they entered the I A this semester they were placed as follows:

I A (*a*) The strongest—relay

I A (*a*) A shade less strong—relay

I A (*b*) Those who required more time and less speed.

When a child in the I A (*a*) group fell behind (occasioned by illness and absence) he was quietly transferred to the I A (*b*) group and a child from that group, who was doing good work, was given his place in the I A (*a*) group.

Result: Twenty from the first I A (*a*) and fifteen from the second I A (*a*) will enter the II A grade in September. These children have done the work of I A and II B. This would not have been possible without classification.

If all classes of approximately the same intelligence had read as well as the best class in the group or even as well as the median (middle) class in the group, the results would have been much higher. Table II shows the best and the poorest class scores.

One would scarcely have supposed that such differences as those between the best and poorest classes of the bright group were

possible. The environment and nationality of the two schools to which these classes belong are much the same. The best class of the slow group (Table II) exceeded the median of the bright group in Test II (Table I). The score made by the best class of the median group in Test I surpasses the best of the bright group (Table II). This class was taught by an unusually skilful teacher who had made her class the subject of special study in connection with her work in the writer's extension course. The right kind of instruction must be provided or the results will not be commensurate with intelligence. Just as an inexperienced operator may be unable to secure a high quality of product out of a first-class machine, so a teacher lacking in knowledge of the best ways of teaching does not get the best out of pupils. A first-rate teacher, on the other hand, may accomplish unexpected results with mediocre pupils. The scores of the best classes in each group indicate that most children have a long distance to go before they even approach the limit of their possibilities. They suggest the need of (1) a careful examination of the most successful means for securing good reading and (2) a concerted effort on the part of those intrusted with the supervision of the classroom teacher's work to see that teachers are trained to use the best methods and that they lead pupils to do what should be expected of them.

Could the pupils have been better grouped and the results made to correspond more closely? The answer to this question is undoubtedly, yes. Both the results of the Pressey test and the teachers' estimates proved to be valuable aids in selecting the children to be placed in each group. The detailed results of the reading test tend to show that on the whole the children designated for the bright, medium, and slow sections belonged there, but many individuals, apparently, could have been better placed. In some instances bright pupils were placed in slow groups intentionally, but in others the pupil's ability was probably underestimated. Likewise, pupils who made a low intelligence score were sometimes placed among the bright. The teachers probably felt, and rightly so in some instances, that the child had not done himself justice. In others, his ability was overestimated, as his subsequent record showed. A single group test does not necessarily provide an accurate measure of the intelligence of *all* of the children.

Neither is a teacher's judgment infallible. Language difficulties are a decided handicap to foreign children in taking a test. Some children become confused and fail to understand what is expected of them. A single test rates accurately a large percentage of those who understand the language, but it is altogether likely that the combined results of several such tests supplemented by the teacher's judgment would provide the best indication of the child's probable future. Cases of serious divergence should be made the subject of a conference between the teacher and the principal, followed, if need be, by close observation and further examination.

Some may question the validity of the Haggerty reading test as a measure of the year's work. This test is one in silent reading. A few good readers probably failed to do well. The test does not measure oral reading. Our observations lead us to believe that those who were able to do well on this test were the ones in nearly all cases whom the teachers considered their best oral readers. A child may fail to develop as rapidly as we feel he should in view of his intelligence. He may be ever so intelligent but yet not get on well in his school work. It may be because he is unwilling to exert himself, because the teacher is not sufficiently skilful, or because she does not have the time to give him proper attention. If all of these entering elements could be removed and if we could obtain a more nearly accurate measure of the intelligence of the child and of his achievement, the correlation between intelligence and progress would probably be found to be much higher.[1]

We firmly believe that the results of this experiment are sufficient to warrant the adoption of a policy of grouping entering pupils wherever possible. New requirements should be set up which vary with the intelligence levels of the children. Promotions should be made to the corresponding group of the next higher grade and should be based upon successful completion of the work outlined for a group of a given level.

[1] It will be of interest to students of statistics to note that while the brighter classes did by far the best on the reading test the actual correlation between intelligence and reading scores for one hundred pupils selected at random was only .34, P.E. .06 in the case of Test I, and .32, P.E. .06 in the case of Test II.

METHODS OF HEALTH INSTRUCTION IN THE SIXTH GRADE[1]

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Articles appearing in the September, November, and January issues of the *Elementary School Journal* emphasized methods for teaching the following health principles in the first five grades: (1) going to bed at seven or eight o'clock, depending on the age of the child, (2) drinking milk three times a day, (3) brushing the teeth every night, (4) drinking a glass of water before breakfast, (5) eating cooked cereal every morning, (6) eating fruit once a day, (7) eating each day one vegetable in addition to potatoes, (8) eliminating tea and coffee from the diet, (9) eating no sweets between meals and reducing the amount eaten at meals, (10) eating meat only once a day, and (11) having fresh air at all times, especially at night.

A. HEALTH PRINCIPLES TO BE TAUGHT IN THE SIXTH GRADE

In the previous articles the health rules for the particular grades have been presented, supplementing those emphasized in the earlier grades. The health rules suggested for the sixth grade are (1) cleanliness, (2) the necessity of having breakfast every morning, and (3) thorough mastication of food. It can be seen that the plans of each grade do not follow any logical classification but that the decision to place the teaching of particular health rules in certain grades is based upon the psychological as well as the physiological characteristics of children at the different ages, upon the relative importance of the health rules, and upon possible adaptation to the general course of study. A brief discussion of the reasons for inculcating in the sixth grade the rules just suggested may not, therefore, be out of order.

[1] This is the fourth of a series of articles on classroom methods for increasing the efficiency of health instruction in the public schools contributed by the Elizabeth McCormick Memorial Fund. Reprints of these articles may be obtained from the Elizabeth McCormick Memorial Fund, 848 North Dearborn Street, Chicago, Illinois.

Psychologically, the tendency of the child, especially the boy of eleven or twelve years of age (the age of the majority of the pupils of the sixth grade), to regard society in general as antagonistic to his interests, his inclination to regard his family as a necessity rather than as a pleasure, his desire to be with the "gang" as much as possible, his love for outdoor life, and his apparent indisposition to take time to attend to personal habits, to eat breakfast, and to masticate his food thoroughly, are good reasons for including in the work of this grade the three rules suggested.

Physiologically, "we have also evidence from returns and anthropology . . . . that the skin becomes more glossy, an effect which it is often striven to increase or diminish by various crude cosmetics, and also that the secretion of sweat is more copious. Both these are factors in the new sense of cleanliness or uncleanliness which now arises."[1] From the standpoint of the second and third suggestions, the following statement by Hall is significant:

> The rhythm of meal-times often tends to break up as if by a new wave of influences from the irregularities of the savage life of our forefathers. In nervous temperaments, especially, food is bolted and breakfast slighted, and love of occasional excessive gorging on edibles not hitherto staple alternates with indifference to or criticism of the family table. . . . . Milk, often taken copiously and with zest before, now becomes unpleasant, and the proportion of solid food desired increases. . . . . There is often a new tendency to bolt food unchewed, due perhaps to more impetuosity of appetite or the increased nerve tension, and temporary loss of the poise that good table manners suggest in this respect.[2]

From the evening meal to the following noonday meal is too long a period for children to be without food. The omission of breakfast not only results in an insufficient amount of food being taken in the other two meals to satisfy the child's daily physical requirements, but may also result in destroying the rhythmic flow of the digestive juices, the effect of which may not be felt at once but may lead to digestive disturbances in later life. The value of breakfast, therefore, cannot be overlooked at this period of health instruction.

[1] G. Stanley Hall, *Adolescence, Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion and Education*, II, 7. New York: D. Appleton & Co., 1904.

[2] *Ibid.*, pp. 11–13.

As the child enters the adolescent period he requires an increased amount of food. A large proportion of this increase will naturally be taken from the foods known as carbohydrates which include starch and sugars. In this group such foods as breads, potatoes, cereals, fruits, and vegetables are found. In digestion "both the starch and the sugar are practically completely digested, especially if the starch is cooked. If raw starch is eaten, however, such as that in green bananas, some of the starch may escape digestion and utilization. The starch is acted on by the saliva in the mouth, the action is continued for a time in the stomach, and the process is completed in the small intestines. . . . . The sugars are digested mostly in the intestines, giving glucose or similar simple sugars. Thus starch and sugars are ultimately changed to practically the same products in the body."[1] It can readily be seen from this statement that it is very important to teach the child to masticate his food thoroughly so that he may obtain the greatest benefit from it at this period of rapid growth. There is no doubt that one of the reasons for underweight is the incomplete utilization of food caused by the bad habit of "bolting the food."

B. RECOMMENDATIONS FOR TEACHING HEALTH PRINCIPLES IN THE SIXTH GRADE

Regardless of the particular phase of health education emphasized in any grade, there should always be at least one or two devices used in each grade to aid in maintaining an abiding interest in a balanced diet—devices of such a character that an opportunity is given to review the knowledge gained in the previous grades and to determine whether a desire is created on the part of the child to follow suggestions until habits are formed. There are three subjects found in the regular course of study of the sixth grade which can, perhaps, be utilized. They are English, history, and arithmetic.

Swift in his study on youth says,

> We have seen that the same subjects of study are tedious under the ordinary classroom method and interesting when made the order of business in a club of the members of the class of which the teacher is an integral but an inconspicuous

[1] Katharine Blunt and Florence Powdermaker, *Food and the War*, p. 17. Boston: Houghton Mifflin Co., 1918.

part. The club idea appeals to the racial instinct of the love of glory—showing off and personal competition, both of which are elements in the group sentiment. There is no lack of attention here.[1]

The desire of the school to interest the children in health education should, of course, take into account these natural inclinations as far as it is possible to do so. Norsworthy and Whitley state that "the attempts at ignoring or suppressing this instinct are the cause of much of the problems of discipline in the schools. . . . . The fact that the schools, many of them, are so organized that this instinct is not given an opportunity to work itself out in connection with the school work is the cause of much of the dissatisfaction with school in boys eleven and twelve, as well as the cause of much of the dropping out from the sixth and seventh grades."[2]

A "convention of foods" is a device recommended for this grade—a device which will utilize these instincts and at the same time review the reasons *why* certain foods should be a part of the daily diet. The plan of this convention should be written by the children as a part of their composition work. The class should be organized according to *Robert's Rules of Order*, thereby giving training in methods of conducting a meeting. The children, having elected a chairman who for the purpose of health education might be called "Judge Scales," are assigned various foods which they are to represent. Various committees should be appointed, the honor of chairmen being given to those foods which are of "greatest value." This procedure should, of course, bring out a discussion as to the method of deciding which foods are of "the greatest value." Milk, for example, may be made the chairman of the publicity committee since it plays such an important part in the diet of all children. The work of this committee is to devise ways and means of inducing more children to drink milk. The suggestions should be discussed and voted upon in the general meeting, and the final plan tried out with members of the organization or with children outside of the group. Brief discussions or papers by children representing certain foods can be presented upon the subject,

[1] Edgar J. Swift, *Youth and the Race*, p. 285. New York: Charles Scribner's Sons, 1912.

[2] Naomi Norsworthy and Mary Whitley, *The Psychology of Childhood*, p. 66. New York: Macmillan Co., 1920.

"What right have I to exist as a food?" This will place upon the individual child the responsibility of finding out why a certain food is a valuable addition to the diet. A two-day convention may be planned to which parents can be invited. This gives splendid training to the program committee and at the same time paves the way for scientific talks upon foods. This plan also presents an opportunity to give information to the parents and at the same time to solicit their co-operation.

Space does not permit giving a complete plan, but the following will suffice as an illustration:

Tea (acting as a temporary chairman): Fellow-foods of the United States, in order that this meeting may organize quickly, I move that Coffee act as chairman.

Pepper: I second the motion.

Tea: It has been moved and seconded that Coffee act as chairman of this meeting; those in favor of the motion will say "aye." (Only two votes are cast, those of Tea and Pepper.) Those opposed will say "no." (All except Tea and Pepper vote "no.") The motion is lost. Other nominations are in order.

Apple: I move that Judge Scales act as chairman of this meeting.

Peach: I second the motion.

Tea: It has been moved and seconded that Judge Scales act as chairman of this meeting; those in favor of the motion will say "aye." (Unanimous vote.) The motion is carried. Judge Scales will take the chair.

Judge Scales: Fellow-foods, the object in organizing this convention is to consider whatever may be to the best interests of the diets of the children of the United States. It is of vital importance to the entire community and to our own interests, and we hope that this meeting will help us to gain much information from each other, and so, in order that the meeting may be most valuable, we want to hear from everyone present.

The first thing that we must do is to elect a secretary who will keep the minutes of the meeting so that they may be published in the different states, as I am sure a large number of people will want to hear about the discussions. The first business, then, is the election of a secretary.

Milk: I nominate Cocoa as secretary. (Seconded.)

Judge Scales: Those in favor of Cocoa acting as secretary of this meeting will say "aye"; those opposed "no." (Everyone votes "aye.") In order that the work of this convention may proceed quickly, I shall appoint Milk as chairman of the publicity committee, Lettuce as chairman of the program committee, and Apple as chairman of the membership committee. I shall ask each chairman to choose the members of his committee.

The membership committee may report that it has refused to accept the credentials of Coffee and Tea because they have no food value. After the organization has been perfected, opportunity is given to each food to tell why it should be included in the diet. To make the work of more interest to the children, the history of some of the foods can be included. For example, after Spinach has discussed the fact that she is not as popular as she deserves to be, Potato takes the floor.

Potato: I feel that perhaps Spinach is a little discouraged about her lack of popularity, and I wish to add a little experience of my own which will illustrate the fact that people are slow about using us as foods and that very frequently we have to use little tricks in order to show the people how good we are. I think that everyone will agree with me that I am very popular now. There is a secret about my family that I do not tell very often, but I am going to repeat it here because I feel that you should know it.

It is generally said that my family came originally from South America. From there they emigrated to Spain in 1560, and some of the more restless ones came back to North America, where an Englishman called Sir Walter Raleigh became interested in my family. This was about twenty-five years later. He adopted a few members and gave them to his gardener, telling him that he had brought back some fruit from America. The gardener planted us. When we appeared as plants a few months later, we were not what the gardener thought we were, and in his wrath he carried a few of our flowers to Sir Walter Raleigh, asking him if he thought this was a fine fruit. Either Sir Walter was ignorant about our history or else he pretended he did not know, for he told the gardener to pull up the weed. When the gardener pulled out our roots, he saw what we really were, but he was not willing to accept us as a food.

Spinach: But how did you become so popular?

Potato: About 1800 a Frenchman, named Parmentier, was taken captive in a war, and the prisoners were fed potatoes. The other soldiers made fun of us, but this fine fellow recognized our value and learned all that he could about our life. When he was free, he persuaded the king, Louis XVI, to give him fifty acres to use in making an experiment. When our flowers appeared, he was so happy that he gathered a bunch of them for the king, who put them in his buttonhole. Of course, our flowers became very popular after that, and all the lords and ladies wore them. But Parmentier was not satisfied because he wanted the poorer class to see how valuable we were. So he used a little trick. He put guards around his land by day so that the people would think that we were so valuable that he was afraid we were going to be stolen. He took them away at night so that the more curious ones might steal us to see what we were like. It was not very long until one of the guards reported

that some of the neighbors had stolen some members of my family. He gave a reward to this guard who had brought him the good news. Soon afterward he gave a big dinner at which every dish contained potato in some disguised form. From that time on, our popularity increased.

A discussion of the various methods of cooking the potato may be included. Other stories may be added, such as that of the bean which was at first consecrated to the dead because of the little black spot on it, later associated with the famous Twelfth Night "Feast of the Bean King," and finally regarded as the national dish of the Americans in the famous "pork and beans"; the story of the lentils in which the Romans imagined that this vegetable caused "heaviness of mind, and made men indolent and lazy"; the story of peas which were sold in Greece and Rome at the circuses and theaters and were distributed free to the people in order to obtain their votes; the story of cabbage to which the Egyptians erected altars; the story of the tomato which was long regarded as a "love-apple" and very poisonous; and the story of the English women who used the foliage of carrots as a decoration on their hats in the same way that feathers and flowers are used today.

The story of corn is perhaps the best illustration of the possibility of connecting this work with history since corn played such a large part in the lives of the early colonists. The saving of the life of Captain John Smith, although attributed entirely to Pocahontas, was accomplished partly as a result of a corn ceremony. The troubles which the New England colonists had with the Indians was caused by the colonists stealing their corn, and the development of the corn country is no other than the story of the Great Northwest. Information regarding the history of corn is easily obtained and is therefore not given here in detail.

C. MEASURING THE RESULTS OF TEACHING HEALTH HABITS

In the previous articles of this series a score card was recommended as a means of maintaining interest among the younger children. However, a device of this type may become monotonous to a group of older children. To give variety a problem-solving method which utilizes the principles of arithmetic taught in the sixth grade may be employed.

"Health is wealth" is a well-known and frequently repeated proverb, but until the last few years we have attached very little importance to its meaning. As a result of a changed attitude toward the increased value of good health, the desired outcome of health education is not the accumulation of many facts, but the development of greater efficiency, which is regarded as an asset not only to the individual but to the nation as well. In other words, a premium has been placed upon good health—a premium which has an actual cash value.

Since one's greatest efficiency is dependent upon strict adherence to all of the laws of health, a good device for checking up the health habits of children is to place a cash value upon each. The following list of values is suggested. These values have been assigned arbitrarily so as to give a variety of figures as an aid in arithmetic; other values can easily be substituted as the particular needs of the group may demand.

Health Rule	Value
1. Going to bed at eight or nine o'clock	$0.20
2. Drinking milk three times a day	.75
3. Brushing the teeth every night	.15
4. Drinking a glass of water before breakfast	.10
5. Eating cooked cereal every morning	.30
6. Eating fruit once a day	.25
7. Eating each day one vegetable in addition to potatoes	.25
8. Eliminating tea and coffee from the diet	.40
9. Eating no sweets between meals	.30
10. Eating meat only once a day	.15
11. Sleeping with the windows open	.15
12. Bathing at least once a week	.25
13. Eating breakfast every morning	.30
14. Masticating food thoroughly	.20

The work of arithmetic in many school systems centers around banking and the making of accounts. In such cases health education and the teaching of bank principles can readily be correlated. The class may be divided into two or three groups to represent various banking institutions in order to have competition. Each child keeps a record of what he has done each day and at the end of the week makes out a deposit slip, the amount of which is credited

to his account. If he violates any of the rules, he makes out a check for the amount of the rule, and this is deducted from his account. Additional interest may be obtained if at the end of the month 3 per cent of the child's bank balance is added to his account if he has gained one-quarter of a pound, 4 per cent if he has gained one-half pound, 5 per cent if he has gained three-quarters of a pound, 6 per cent if he has added a pound to his weight, etc. The aggregate number of pounds in each group may represent the capital stock of the bank. In this manner the "United Bank to Conserve Health" may be used to teach banking principles and methods of keeping accounts, while a premium in cash value is attached to health habits.

G. Stanley Hall makes this statement regarding the attitude the child of this age has toward money value:

> Before puberty, there is great eagerness to possess things that are of immediate service; but after its dawn, the desire of possession takes another form, and money for its own sake, which is at first an abstraction, comes to be respected or regarded as an object of extreme desire, because it seems to be the embodiment of all values. . . . . This tendency to thrift is strongest in boys, and both sexes often show the tendency to moralize, that is so strong in the early teens. Much of our school work in arithmetic is dominated by the money sense. . . . . This sense tends to prevent pauperism, prodigality, is an immense stimulus to the imagination and develops purpose to pursue a distant object for a long time.[1]

Thus, it appears that the psychological characteristics of children of this age afford abundant opportunity for correlating health instruction with English, history, and arithmetic.

[1] G. Stanley Hall, *Youth; Its Education, Regimen, and Hygiene*, p. 220. New York: D. Appleton & Co., 1906.

THE "DOUBLE-TRACK" SYSTEM IN A SMALL SCHOOL

C. W. ODELL
University of Illinois

In the discussion of "double-track" and other flexible plans of school progress, the writer has often heard principals and superintendents of small schools lament the fact that such schemes would work in large systems but not in their own. Hence it is thought worth while to present the simple plan which has been employed in a small school and which can be used in any school having at least one teacher to each grade. The school in which this plan was used is a typical consolidated township school having just eight grade teachers, one for each grade. Beginners regularly enter only in September, and organization is, therefore, on a yearly basis.

The plan provided that as soon as a new class entered the first grade it should be divided into A and B sections. At first this division was merely tentative, being based on the teacher's estimate of the pupils' ability after perhaps a week's acquaintance with them. Within the first month or six weeks of the school year, all of the new pupils concerning whose ability there seemed to be any question were tested with the Stanford Revision of the Binet-Simon Scale, and a more permanent division into sections was made. This division was not made entirely upon the basis of the tests, but gave some weight to the teacher's estimate of the pupils.

The plan was that the B sections should complete the elementary course of study in the normal time of eight years; the A sections, in seven years. As the length of school year was thirty-six weeks, this necessitated the A sections gaining about five weeks' work per year over the B sections. To adapt the state course of study to the A sections the work was redivided into seven rather than eight units, observing the principle of gaining five weeks' work per year as nearly as possible without making a division of the subject-matter at unsuitable points. Thus, the gain was not absolutely five weeks per year, but perhaps four one year, six the next, and so on.

The membership of the two sections as established at the first testing did not remain fixed. Pupils were shifted from one section to another or even from one grade to another at any time that it seemed advisable. Whenever the teacher recommended such a change, the pupil was tested if he had not already taken a test, and in some doubtful cases even if he had. Such constant shifting accommodated those pupils who had lost a considerable amount of time through prolonged absence, those who could not quite complete the course of study in eight years but did not need to lose a whole year's work at once, and those who could do the work in less than seven years and yet who would have found it hard to skip a whole year's work at one time.

When the system was first started, Grades I to V were divided into sections. This introduced a problem that would have been avoided had it been put into operation only in the first grade at the beginning—that of caring for those A sections which did not have time to gain a whole year's work at the rate of five weeks per year. Provision was made for this in the followlng manner: Section A of the fifth grade had at the end of three years completed some fifteen weeks of regular eighth-grade work, although still classified as Section A of the seventh grade. The work of the next year was so planned as to include the remainder of the eighth-grade work carried half-time through the whole year and two regular high-school Freshman subjects. Thus this section can without undue effort complete the high-school course in three more years and save one year between the fifth grade and high-school graduation. Those in the A sections of the fourth and third grades will have gained about twenty and twenty-five weeks' work, respectively, by the time they complete their nominal VII A work and can be provided for by the same method as those of the fifth grade, except that they can probably do more high-school work. The pupils of the second-grade A section were to gain about six weeks' work per year rather than five, thus bringing them out even at the end of the elementary course. After this group there were no more which offered a special problem.

In practice the results were encouraging. The B pupils were alert and eager to win promotion into the A sections, while those

in the A sections worked hard to avoid being dropped into the lower sections. Also the results of grouping together pupils of more nearly equal ability than those of a whole grade were helpful. The pupils were given a number of standard tests from time to time during the three years after the plan was started, the results of which showed that the work done by the A sections was fully up to standard for their advanced position.

In general, the size of the two sections was about the same. This does not signify that one-half of the pupils will complete the course of study in eight years and the other half in seven, as many pupils holding membership in the A sections for a time cannot retain it throughout their course. While no definite figures can be given, it appears that from 25 to 30 per cent of the pupils will complete the elementary grades in seven years; about 50 per cent, in eight years; and the remainder, in nine or more, if ever.

There are several improvements which might be made upon this plan, especially now that group intelligence tests are available. When this plan was started there were no such tests to be obtained, and the plan did not include the testing of all children, as the time required for individual tests was prohibitive. In general, the best quarter and the worst quarter of the children were tested, the middle half not being tested. A further improvement would be the organization of three sections rather than two, the additional section being designed to do the work in nine years. Such a plan would require the teachers in an eight-teacher school to handle three sections each; hence it was not deemed advisable to use it in the introduction of this general scheme. Buildings with twelve or more grade teachers could easily organize three sections in each grade and yet not require any teacher to handle more than two sections. Systems organized upon a semester basis could easily organize sections to complete the course in six and one-half years, seven and one-half years, and eight and one-half years as well as in seven, eight, and nine years and thus secure even more homogeneous groups. Also the organization of an ungraded room to assist pupils being skipped ahead or those in danger of dropping back would be a very worth-while adjunct to such a plan.

Educational Writings

REVIEWS AND BOOK NOTES

Handling a universal group test.—A unique case in the field of intelligence tests is one that is frankly professed to be equally well suited to the kindergarten and to the university, that is as well adapted for commercial use as for educational use, and that in twenty-five minutes of testing will obtain a reliable measure of the various "intelligence ratios" of a heterogeneous group. One would expect such a test to be used by a variety of examiners, trained and untrained. There is need, then, for a handbook that contains not only the shop-talk of using the test, but also enough of the theory of mental testing to give the average teacher an idea of what it is all about.

The little Myers manual[1] is as broad in its scope as the test which it explains. It has complete directions for giving, scoring, and interpreting the *Mental Measure;* it gives the history, kinds, aims, and theory of intelligence tests in general; it explains the normal probability curve and gives directions for computing the median; and it interprets the meaning of norms and tells how they are derived. Within its fifty odd pages it contains the outlines of a whole college course in mental tests.

Although written frankly to promote the Myers test, a purpose which the reader is not allowed to forget for more than a page or two at a time, the book is a readable presentation of the essential facts that every teacher should know about testing. The attitude taken by the authors toward the use of intelligence tests is a reasonable one. To illustrate, these remarks are made concerning the interpretation of intelligence scores:

> However, the teacher should be cautioned against attempting individual diagnosis on the basis of such ratings. Each child's rating she should consider merely as a probable measure of his ability and in no wise as a final perfect measure [p. 32].

This is sound doctrine.

To the scientist the evidence that is produced to show that the *Mental Measure* secures ratings from kindergarten to college that distribute according to the normal probability curve is interesting. One of the most stimulating

[1] CAROLINE E. MYERS and GARRY C. MYERS, *Measuring Minds: an Examiner's Manual to Accompany the Myers Mental Measure.* New York: Newson & Co., 1921. Pp. 55.

parts of the book is the section in which is discussed the adapting of instruction to bright and to dull children.

The book does not contain very much that is new; but the method of presentation makes it, like the test, unique. It is a stimulating and valuable little book.

G. H. CAPPS

Moral education.—One of the most vital problems in all American education today is the problem of carrying on effective moral training. The great difficulty in the working out of a definite scheme of social training designed to develop stability of moral behavior has been the lack of tangible goals and the lack of a systematic method of procedure in attaining desired social habits. It was to overcome this difficulty that Mr. Voelker undertook his study in social education.[1] The general purpose and scope of his undertaking are very well set forth in the closing paragraph of the first chapter, which reads as follows:

> The general aim of this study, therefore, is to try to find a secure basis upon which a broad program of social education may be built. Its specific aims are first, to determine what are a few of the more important objectives of social education upon which there may be general agreement; second, to assemble and interpret certain widely approved and understood methods of teaching; and third, to investigate whether certain moral, civic, and religious standards of behavior, inculcated by certain methods of teaching, will actually serve in the guidance and control of conduct [p. 3].

Chapter ii takes up the discussion of the problem of objectives in social education and presents some twelve commonly accepted moral goals. The author takes into account the worth-while literature that is available on these social objectives and quotes rather freely from a number of sources. The third chapter presents the problem of methods. The discussion sets forth in considerable detail twelve assumptions which the author says "are either expressed or implied in the generally accepted educational theories of the present time." The fourth chapter discusses the function of ideals and attitudes in the development of social behavior. The discussion concerning the limitation of the function of habits is especially illuminating and helpful. Chapter v gives an account of an experiment in which an attempt was made to test the results of certain methods of moral training. One very commendable feature of this account is that it gives the tests that were discarded with the reasons for their failure to produce satisfactory results. The methods of instruction, the tests employed to check results, the method of scoring the tests, and the tabulation of the results of the tests are very ably handled in the description. The final chapter presents the conclusions drawn from the study, and the author makes only such claims as the data seems to warrant.

[1] PAUL FREDERICK VOELKER, *The Function of Ideals and Attitudes in Social Education*. "Teachers College Contributions to Education," No. 112. New York: Teachers College, Columbia University, 1921. Pp. v+126.

The entire discussion is most stimulating and suggestive and will prove of great value to teachers, supervisors, principals, and superintendents. It will also be helpful to students of moral education and especially to those who are interested in pursuing research studies in experimental undertakings. The objectives and the assumptions comprise a very valuable body of principles from which to begin the attack upon the problem of devising a definite program of social education.

H. W. NUTT

Adapting the school to the individual.—The problem of providing for individual differences among pupils is receiving more serious and widespread consideration at the present time than ever before in the history of education. Recent developments in educational psychology have greatly emphasized the failure of mass education, in its present form, to meet the specific needs of all pupils. As a result, many experiments are under way, all of which are attempting to find some means of adapting a compulsory education system to the varying needs of individual pupils. One of these experiments, which has been tried for the past year and a half in Dalton, Massachusetts, is described in great detail in a recent book[1] by Evelyn Dewey.

The essential elements of the plan are as follows. Beginning with the fourth grade, the work of the school year is divided, for each subject, into ten monthly assignments or "contracts." A pupil carrying five subjects would, therefore, receive at the beginning of the year five contracts, upon which he is allowed to work according to a time schedule of his own making. He can complete them one at a time or he can carry on the work of all simultaneously. In working upon each contract he goes to the corresponding school room or "laboratory," where he finds all the materials needed and where the teacher in that particular subject is present to give assistance as needed. The forenoon, from 8:45 to 12:00, is considered free time, during which the pupil may attack his work as he pleases. During the half-hour beginning at noon the entire school meets for assembly exercises; during the following half-hour group or class conferences are held, making possible one such meeting per week for each of the five subjects. At this conference the teacher gets a weekly report of the progress of each pupil. The afternoon hours are given over to work in manual training, art, recreation, and athletics, these activities being conducted in groups rather than individually. Since each pupil works individually on his regular academic assignments, there is no attempt to keep progress uniform. When one monthly contract is completed, the work for the following month may be taken up immediately. This, of course, makes possible a flexible rate of work adapted to pupils of different degrees of brightness, each pupil progressing according to his own capacity. The plan is used in both the elementary school and the high school.

[1] EVELYN DEWEY, *The Dalton Laboratory Plan*. New York: E. P. Dutton & Co., 1922. Pp. ix+173. $2.00.

Following the account of the operation of the plan in Dalton, Miss Dewey describes a similar type of organization in two other schools, one in the Streathan County secondary school in London, the other in a small private school in New York City. In each of these schools the system has been used for only two years.

Other chapters in the book give testimonials to the success of the plan from a number of teachers and pupils, these comments having been collected by the questionnaire method. The last chapter makes a plea for some form of educational improvement which will bring about general results similar to those obtained at Dalton.

The content of the book is of considerable significance at the present time. It will be read with great interest by the many school workers who are giving serious thought to the same problem. Considering the fact that the book is attacking an educational problem which is distinctly in an experimental stage, one would expect to find a critical, scientific attitude toward the plan, with the presentation of whatever objective data might be gathered during the short periods of trial. Here the reader is disappointed. He finds, for example, many such paragraphs as the following:

> Rarely a pupil will be found whose habits and sense of responsibility are so poor that he will fail completely in organizing his time to complete his contracts. For such a pupil, it is a simple matter to make a program that requires him to report in certain laboratories at certain periods. Seeing his fellow-pupils working independently, the normal child will be stimulated to prove to his teachers that such special supervision is unnecessary, and after a few months, during which his program is adapted to his progress, he will be able to work as the others do [p. 26].

A page of concrete data, showing for the first year and a half of the experiment the actual average time for the completion of the monthly contracts for each subject and showing also the individual variations from these averages, would go much farther toward enabling the reader to judge the pupil's "sense of responsibility" under such a system of work.

Again, one reads:

> This type of study develops, by requiring accurate work, perseverance, critical judgment, and initiative. Where children are interested, their judgment is sound. They reject the trivial; shut out of their groups the mental hangers-on and the lazy; and, because they are working with their peers, stimulate each other to greater efforts [p. 42].

If objective evidence could be presented to substantiate this statement, it would enormously strengthen the case for the proposed plan. It would be easily possible to set up an experiment covering these points. Without such evidence, one finds that his acquaintance with ordinary fifth-grade pupils tends to make him skeptical.

As a popular presentation of the Dalton Plan, the book will excite general interest. But as a presentation to the educational profession, the book lacks that critical, objective treatment which such an interesting scheme of reorganization deserves.

G. T. BUSWELL

Measuring vocational education.—The field of educational measurements has been fairly flooded with tests of all kinds. The interest has been great. The testing technique has become highly developed. Too often, the analysis of the characteristics to be tested has been neglected because of the interest in the proper technical procedure of test-building and the development of the necessary standards. Again, we are told that variations in the results of elements tested are similar. As a consequence, we have many tests which undoubtedly test something, but what that something is and how it will aid educationally in the classifying of the individual are in no way determined.

Probably, because of its complexity, the field of trade or vocational education has been less prolific in the production of tests than many of the others. The evaluations so far have been largely subjective. How valuable trade tests may become, how they may be used to advantage in school work, what the strong and the weak points in the existing schemes of trade tests are, and the need for real investigation along trade-test lines are clearly brought out in a book by Mr. Toops.[1]

The trade school cannot evaluate its product in terms intelligible to the employer because it has no unit to serve as a basis. The requirements of the job must be known as well as the ability of the pupil before the evaluation can be made successfully. Tests are necessary for this purpose. Schools have tried to test their product in this way but not very successfully. The army has been somewhat more successful in its attempts. Mr. Toops classifies trade tests into "tests of proficiency or success in trade" and "tests in trade capacity, potentiality, or promise." He illustrates four kinds of tests of proficiency: the recall one-word answer, recognition or multiple choice, true-false, and picture. He then shows how they may be and have been built up, giving a critical evaluation of their reliability on the basis of various correlations, and pointing out how they may be adapted to the work of the trade school. In the testing for trade capacity it is necessary to analyze both the individual and the job. An illustration of a plan of job-analysis is given, but the more difficult problem, testing the possible success of the individual if placed in a particular job, is still to be solved. What is the test or series of tests that will do it? The answer is not yet at hand.

A critical analysis of a scheme employed in a trade school, by means of intercorrelations, indicates that the tests have promise but that the results are not positive enough to predict with much success.

The book should interest and stimulate those engaged in vocational testing. Much of the illustrative material used is excellent.

ERNST E. WELLEMEYER

[1] HERBERT ANDERSON TOOPS, *Trade Tests in Education.* "Teachers College Contributions to Education," No. 115. New York: Teachers College, Columbia University, 1921. Pp. vi+118.

Teaching elementary-school subjects.—The beginning teacher is often disappointed because available literature dealing with methods of instruction concerns itself too fully with principles and theory and leaves her to begin the work of classroom instruction with few specific plans in mind. While it is true that a growing effectiveness in teaching will scarcely result from experience unanalyzed, actual teaching begins with classroom devices, and a clear comprehension of the principles upon which successful methods are based comes rather more commonly as the result of employing these methods in instruction. In recognition of the need of inexperienced teachers for ready-made plans of procedure, and with a view to leading them to profit from experience as acquired by constructive study of the results of their work, the author of a recent book[1] of methods for elementary-school teachers presents an extensive list of devices for use in teaching, along with a brief discussion of the generally accepted theories underlying instruction in certain of the elementary-school subjects.

The basis of the discussion is to be found in actual teaching situations. The point of view governing the selection and the organization of the material employed is explained in the author's statement concerning the aim of the book.

> Its professional purpose is to analyze classroom activities which the instructor may have performed mechanically without being conscious of principles involved, to afford opportunity for intelligent evaluation of procedures in common use, and to suggest as diversified methods of presentation as the limits of one small volume render possible. . . . . Psychological principles of which method studies should be the application lose none of their truth or scientific value by being presented in their schoolroom contacts as found in the everyday experience of teachers. . . . . Specific and concrete teaching suggestions are worth while when they lead to intelligent use of new methods, even though an imitative stage comes before the new plane of intelligence. Imitation of classroom devices is bad only when it never achieves more than the mechanical and rule of thumb [p. v].

Using technique in the sense in which the term method is more usually employed, the author considers first a number of the generally accepted teaching principles and activities. Emphasis is given to the fact that teaching is primarily concerned with boys and girls rather than with subject-matter. Emotional response and attention are regarded as requisite to learning; and real education, it is asserted, develops capacity for sustained, independent intellectual effort. Teaching purposes are classified as of three types: (1) instruction in which knowledge and judgment are prominent; (2) instruction consisting largely in drill for permanent retention, habit formation, or skill; (3) development of ideals and attitudes. Certain current innovations, such as the socialized recitation and the project, are discussed from the standpoint of advantages and disadvantages. The study period, lesson plans, the assignment, and testing are briefly discussed. The discussion throughout the chapter

[1] SHELDON EMMOR DAVIS, *The Technique of Teaching*. New York: Macmillan Co., 1922. Pp. viii+346.

has the advantage of being direct and concise, but it is open to the criticism that the effort at conciseness has in a few cases resulted in inadequate treatment.

Detailed consideration is given to six elementary-school subjects, spelling, reading and literature, composition and grammar, arithmetic, history, and geography. In each case the discussion includes a statement of the principal aims and problems involved, and special emphasis is placed upon the psychological facts with which the teacher should be familiar. The discussion is enriched with concrete material in the form of illustrations and devices which have been found helpful in teaching the subject. At the close of each chapter is a list of exercises to be used in testing the suggested devices by principles explained in the text. For example, geography is described as a subject that is difficult to teach because a large part of its subject-matter changes rapidly and because of the tendency to overemphasize factors of local or regional significance. The generally accepted definitions of geography are stated and explained; valid bases of selection of the content of the geography curriculum are suggested; the value and proper use of problems, projects, maps, pictures, diagrams, museums, and excursions are discussed and illustration given where possible. Examples of both problems and projects are included. A simple form of weather chart is shown, and suggestions are made as to its use. Exercises in the form of geography games, co-operative map-making, location contests, etc., are presented at the close of the chapter.

The book will be found valuable for use in methods classes as well as for reference by those engaged in teaching. Its principal value lies in the great amount of concrete material presented. If it is used as a textbook, the very brief discussions of theories and principles will need to be supplemented by reference to other sources.

N. B. HENRY

A useful compendium on child care and child welfare.—The unprecedented multiplication of books, pamphlets, and periodicals during the past decade has rendered almost futile the attempt of any individual to become familiar with the literature of more than a minutely subdivided field of knowledge. It has been said that there are no living scientists, but merely specialists in one or another of the dozens of fields of science. An understanding of the interdependence of individuals, communities, and nations has been considered an essential constituent of the mental equipage of statesmen, reformers, and others who influence social progress. There seems to be justification for the belief that a knowledge of the interdependencies of all branches of learning is essential to a functional mastery of any particular field of knowledge. There is urgent need for the old-fashioned compendium drawn up with reference to the needs of specialized groups of scholars. Such a compendium[1] has been

[1] *Child Care and Child Welfare, Outlines for Study.* "Home Economics Series No. 5," Bulletin No. 65. Washington: Federal Board for Vocational Education, 1921. Pp. 502. $0.35.

prepared by the Children's Bureau and the Federal Board for Vocational Education.

This publication contains the latest and most pertinent information bearing on the entire field of child care and welfare from before birth to maturity. The material is presented in forty-six outlines which are grouped under seven sections. The topics of these sections are as follows: health problems of mother and infant; the development, general hygiene, and feeding of the child; problems related to safeguarding the health of the child; child mentality and management; play and recreation; child labor; and children in need of special care. Another valuable feature of this compendium is the inclusion of topical bibliographies between the outlines.

The bulletin will be especially useful to teachers and students of home economics. It will also be valuable to all teachers who wish to feel well informed on the important subject of childhood. Last but not least, it will be almost indispensable in any home where there is a child present or expected.

G. M. HOYT

An experimental study of the development of intelligence.—The question as to the changes in mental traits that take place with age is one upon which objective evidence must be brought to bear. Following this principle, Dr. Brooks in a recent study[1] seeks to discover by means of re-tests the changes that actually take place from one year to another. Many previous investigators, in dealing with the same problem, have not re-tested the same children, but have taken different groups for the different ages. The author also attempts to find the correlation between mental traits at different ages and the relation of intellectual ability to rate of improvement.

The subjects for these tests were 171 children, ranging in age from nine to fifteen years and enrolled in Grades IV to IX. These children represented a random sampling of various social and economic groups. Unusual care was taken in administering the tests, which were given in May, 1918, May, 1919, and May, 1920. The twenty tests given covered such functions as handwriting, reasoning, arithmetic, opposites, memory, direction, and general intelligence.

After a historical survey of the experimental data in this field for purposes of comparison, the author proceeds to give a statistical treatment of his results. In order to render the different tests comparable and to compare gains at the different ages, he has classified his results into groups.

The findings in this investigation differ somewhat from those of other studies, probably due to the fact that the author uses methods different from those formerly employed. His results based upon the re-tests of the same children over a period of two years show the rate of gain in mental traits of children nine to fifteen years of age to be practically a straight-line develop-

[1] FOWLER DELL BROOKS. *Changes in Mental Traits with Age.* "Teachers College Contributions to Education," No. 116. New York: Teachers College, Columbia University, 1921. Pp. 86.

ment, decreasing somewhat at the higher age levels. He found no significant sex difference and no cession of growth up to the age of fifteen.

The doctrines of compensation, adolescent spurt, pre-adolescent spurt, and other similar interesting characterizations of mental development are not supported by the experimental re-test data here presented [p. 83].

The author saw the need of more experimentation to determine the extent of correlation between intellectual ability and rate of improvement. He found that the permanence of abilities seems to be greatest in those traits which are usually thought of as indicating greater intelligence.

The study is carefully planned and will stimulate further interest in this field. SHIRLEY HAMRIN

A new civics textbook.—A recent book[1] in community civics has developed out of its author's extensive classroom experience in this field. In addition to using this material with frequent revisions in his own classes, he also had it used, in a similar manner, in other schools in different parts of the country. From the latter he has received many practical suggestions which have been used to advantage. This text is the work of a man who has made the preparation of an adequate junior high school course in civics his classroom problem during a period of more than three years. This fact should commend the book to a careful consideration.

In the content, organization of material, and presentation, the book is unrivaled. The underlying theme is based on the responsibility and interdependence of individuals in community or group life. In presenting this theme the author has divided the subject-matter into four parts. Part I begins with a chapter entitled "Myself and Others" and is followed, in order, by a chapter each on the topics "The Family," "The School," "The Church," and "The Community." It will be noted that the discussion proceeds in the order in which the individual extends his social experiences. In Part II, some of the outstanding problems of the community—"Immigration," "Health," "Police and Fire Protection," "Recreation," "Civic Beauty," and "Society's Defectives"—are treated. Here the author has not attempted to cover all of the problems, but only those that stand out and justify an important share in a year's course. In Part III, there are four chapters devoted to some of the industrial problems of society; while in Part IV, four chapters, totaling ninety-five pages, are devoted to a study of government and politics in city, state, and nation. The author's conclusions are based on the assumption that boys and girls should be given that civic material which concerns them now, and by virtue of which they will be motivated "to do their part, in bettering their own groups and neighborhood as well as their state, their country, and the world" (p. vii). Upon careful examination, one must admit that Mr. Hill's course has been wisely chosen.

[1] HOWARD COPELAND HILL, *Community Life and Civic Problems*. Boston: Ginn & Co., 1922. Pp. xx+528+xxxiii.

The book is copiously as well as carefully illustrated. The pictures are well executed, placed where they are needed, and are of sufficient size to be of real use to the reader. The pedagogical aids consist of questions and problems requiring thought, observation, and investigation; questions for debate; topics for compositions; and an extensive bibliography at the end of each chapter. The bibliography includes a list of study references, history and related material, imaginative literature such as novels, stories, and poems, and finally a brief teachers' reading list.

Each chapter is divided into sections followed by suggestive questions. Such an arrangement, with the topic-problem plan of presenting the material, admits of adjusting the book to a semester or year course, since omissions can be made easily.

Community civics is of necessity finding a place in the course of study of progressive schools because, when properly presented, it becomes vital and gives the needed training in sociology, economics, and political science without unduly crowding the program. Until very recently there has been a dearth of available material for the junior high school. In many cases, civics books have a tendency to be overbalanced along the line of the author's special field of economics, sociology, or government. Mr. Hill seems to have maintained a proper balance in this respect, and, by avoiding the temptation to cover a multitude of topics very briefly, he has had an opportunity to leave with the student a desire actively to participate in the solution of the problems which his community faces. The style and diction, which are well adapted to the junior high school level, should lead the pupil to read on out of pure interest and pleasure. The book meets an immediate need.

REID STEPHENS

A guide to health teaching.—One of the most important problems confronting our public schools today is the adequate teaching of health habits. It is the growing belief among educators that health teaching to be effective must be not only scientific but also practical. The incorporation of this practical-scientific method of health teaching is the predominant feature of a recent two-book series[1] on health training, of which the first volume is devoted to "Building Health Habits" and the second to "Keeping the Body in Health."

> It is the aim of the *Everyday Health Series* to present in an attractive form for pupils in the elementary school the latest and most accurate knowledge relating to physiology and to the hygiene of daily life. The constant effort of the authors has been to make scientific knowledge so simple, so concrete, and so inviting that pupils can hardly fail to take an interest in the problems of preserving health for the purpose of making the most of life [p. v].

The first volume gives a practical treatment of the basic principles underlying health habits. In order that the book might be best adapted to the

[1] M. V. O'SHEA and J. H. KELLOGG, *The Everyday Health Series*. New York: Macmillan Co., 1921. Vol. I, pp. v+280. Vol. II, pp. v+311.

interests of intermediate pupils, the authors have studied children in respect to their attitude toward different methods of presenting health facts. Finding that the average child wishes to increase his energy for his games and play and to avoid sickness, they have planned the book accordingly.

The second volume presents a more advanced discussion, dealing principally with the organisms of the body and their relation to each other. Particular attention is given to the proper care of these organisms as the most essential factor in promoting health and maximum efficiency. A notable feature is the treatment given to the training of the mind, both as the governor of the body and in its relation to the organs of sense which act as gateways to the mind.

The series is rich in illustrative material, as the authors believe that the best way of emphasizing health facts is to present them by means of photographs and drawings. At the end of each lesson, a list of health problems and questions is presented which will be of much practical value to the teacher. "At least one interesting and practical original exercise is suggested for every principle of health presented in each lesson" (p. v).

The scientific and practical treatment of this problem, with its psychological organization, will serve as a useful guide for health teaching in the elementary grades.

W. D. BOWMAN

World history for children.—The development of a true sense of historical perspective for elementary-school children is exceedingly difficult. Certain it is that very few children in the grades have anything like an adequate time sense regarding the development of mankind. While their stage of maturity precludes the mature perspective which they may finally reach, nevertheless their perceptions of past events may be materially clarified by a wiser organization of the study of history. It is to give to the child a wide view of the experiences of the race that Professor Van Loon has recently presented his interesting and comprehensive account.[1]

The book begins with the origins of material and living forms, presenting in three brief chapters a simple story of the modern conception of this period. From this point on, the book describes the sequence of human progress through the major stages of history down to the present era. The book does in an elementary way what Wells's *Outline* does for the adult reader. In fairness to the author, however, it should be stated that seven years ago Professor Van Loon began to gather material for the series to which this volume belongs and that it is not in any sense an imitation of the Wells book.

The style of the book is particularly adapted to the interest of school children. It is good literature as well as good history. On the whole, the large number of illustrations adds much to the interest of the book. A possible

[1] HENDRIK VAN LOON, *The Story of Mankind*. New York: Boni & Liveright, 1921. Pp. xxviii+479. $5.00.

criticism here would be that in a number of cases the interpretation of the picture depends upon a more mature understanding of its symbolism than the immature reader would possess. Animated maps are repeatedly used in a very effective manner.

The book is an excellent piece of work and should prove to be widely useful in the intermediate grades and the junior high school. In a number of respects it is a truly outstanding piece of work.

Language work growing out of a study of children's practices.—Beginning the preparation of language textbooks with a useful examination of the actual practices of children who are to use the books is somewhat unique in textbook-making. This commendable effort has been made by the authors of a series of two books[1] recently issued by the World Book Company.

The authors, having examined thoroughly the scientific investigations of recent years which record prevalent language errors and spelling weaknesses, have based their drill lessons upon the findings. In addition, as the title indicates, the authors stress pupil activity; they teach functional grammar only; they teach both oral and written expression as a manifestation of the pupil's own thinking. Best of all, the authors constantly stress the social significance of language, seeking to teach in such a way that "the relation to good citizenship will become thoroughly established in the upper grades" (p. iv). Withal, the series furnishes for Grades III to VIII inclusive a thoroughly sound, progressive, and elastic course of study in English. In illustration, general appearance, and press work, the series is wholly commendable.

R. L. LYMAN

Elementary treatment of electricity.—General science instructors who need a simple and practical supplementary text on the subject of electricity will find a recent book[2] by Mr. Willoughby worth careful examination.

The book presents in simple, non-technical language the elements of electrical theory, together with a description of the use of electricity in the many practical situations of life. It is written for the intermediate and junior high school grades with the aim of giving only those principles which are of practical value. It provides questions and exercises for class discussion and also suggestions for experiments. The clear explanation of many common electrical devices and the excellent illustrations make a very interesting and useful supplementary manual. It meets a need which the general texts in physics or elementary science fail to supply.

[1] JULIA HELEN WOHLFARTH, *Self-Help English Lessons, First Book.* Pp. xiii+256. JULIA HELEN WOHLFARTH and JOHN J. MAHONEY, *Self-Help English Lessons, Second Book.* Pp. xiv+338. Yonkers-on-Hudson, New York: World Book Co., 1921.

[2] GEORGE A. WILLOUGHBY, *Practical Electricity for Beginners.* Peoria, Illinois: Manual Arts Press, 1921. Pp. 104.

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DEWEY, EVELYN. *The Dalton Laboratory Plan.* New York: E. P. Dutton & Co., 1922. Pp. ix+173. $2.00.

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MCCALL, WILLIAM A. *How to Measure in Education.* New York: Macmillan Co., 1922. Pp. xiii+416.

MONROE, W. S. *Types of Learning Required of Pupils in the Seventh and Eighth Grades and in the High School.* "Bureau of Educational Research Bulletin," No. 7. Urbana, Illinois: University of Illinois, 1921. Pp. 16. $0.15.

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MCMURRY, FRANK M., and PARKINS, A. E. *Advanced Geography.* New York: Macmillan Co., 1921. Pp. 501.

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Bulletin No. 7, 1921—*Organization for Visual Instruction.*

Bulletin No. 25, 1921—*A School Building Program for Athens, Georgia.*

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